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**RIVERSIDE TEXTBOOKS
IN EDUCATION**

EDITED BY ELLWOOD P. CUBBERLEY

**PROFESSOR OF EDUCATION
LELAND STANFORD JUNIOR UNIVERSITY**

PSYCHOLOGY FOR NORMAL SCHOOLS

BY

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TO MY WIFE

EDITOR'S INTRODUCTION

ONE of the problems in organization to which teachers of education in normal schools and colleges have recently given much careful thought is that of what type of introductory course in education is best suited to the needs of the student beginning the subject — what type of introductory subject-matter will best serve to orient prospective teachers in reference to the field of education. Different answers have been arrived at in different institutions and sections of the country, varying somewhat with the purposes in mind in the training to be given. Even the answers arrived at must be regarded as somewhat tentative in character, and subject to further modification as the developing needs of professional training may indicate as desirable.

Four main lines of approach to the subject of education may now be said to be employed, in different institutions and places. These may be characterized by the terms *historical*, *sociological*, *psychological*, and *instructional*. The *historical* approach introduces the prospective teacher to the subject by presenting the larger problems of present-day education in the light of their historical development. The *sociological* approach provides an informational introduction, intended to reveal the place and purpose of public education in a democratic society, and dealing with such topics as the social necessity of education, the means and aims of present-day schools, the principles underlying the maintenance and administration of public education, the school as a selective agent for society, and the place and work of the teacher in the scheme of education provided by the State. The *psychological* approach deals with the nature of the mind and of the educational process, and reveals to the student how fully education is primarily a process of producing desirable and preventing undesirable

changes in human beings. The *instructional* approach begins immediately with the teaching process itself, and reveals the teacher as the instrument and the pupil as the object of education, and how these two meet and interact through the machinery of the school as expressed in school organization, discipline, programs, curriculum, studying, reciting, grading, and promotion, and the importance of the teacher's personality in such a process.

It has been one of the purposes of the Riverside Textbooks in Education to present to teachers and students texts which will enable instructors to follow any one of these four main approaches, or to combine two or more in an introductory course in teacher training. The first line of approach has been covered in the Editor's *Public Education in the United States*; a textbook for the second is in preparation, and will be ready before long; the third is covered by the present volume; and the fourth has been covered by Sears's *Classroom Organization and Control*.

Professor Averill's text, representing the *psychological* approach, presents the child to be taught in the threefold aspect of his original equipment of instincts and capacities, the processes by means of which he learns, and the differences that exist between children. The study of the child's original equipment is approached through a study of his behavior. This is followed by a study of the child's heredity, and capacity for learning. The third main division of the volume, discusses the differences between individuals and the causes for them, and the effect of these differences on the problem of child training.

The book, in keeping with its introductory character, is divided into a series of Lessons, rather than chapters; and these are preceded by a few suggestions for Observational Studies to prepare the student better for what is to be presented in the lessons. A series of Topics for Further Study have been added to the lessons, and finally a related series, entitled The Lesson Applied, have been provided to clinch what has been presented for study. The teaching form of

the volume evidences long and successful experience in teaching elementary classes, as well as thoughtful organization on the part of the author. Representing, as the volume does, the consensus of opinion as to what a course in elementary educational psychology should contain, it is believed that this new textbook presents a treatment that will be welcomed by teachers of the subject in normal schools and teacher-training courses generally.

ELLWOOD P. CUBBERLEY

FOREWORD

IN the late summer of 1919 the section of Psychology Instructors of the Massachusetts State Normal School Teachers Association, in session at Bridgewater, Massachusetts, raised their voices in a united plea for textbooks in psychology which should be more within the range of young teachers-in-training than is true of most texts in this subject now available. That plea is, in part, the justification for the addition of the present book to the already large number of texts in psychology which are on the market.

The experience of several years in offering courses in professional subjects to teachers-in-training has demonstrated to the author of this manual the tremendous need which exists for inclusive texts in psychology that are adaptable to training-school work. It is my frank opinion, checked up by that of a goodly number of my colleagues in normal-school work, that there are very few textbooks indeed at the present time which meet the needs of training-school classes in psychology. In a very special sense normal-school psychology must be highly practical, highly workable, and highly understandable. There is no time in our two-year courses for laboratory experimentation, much as we ought to have it, nor for going into theoretical or controversial territory. What we need and must have is a psychology stripped naked of all needless technicalities, disentwined from all irrelevant supposition and theorizing, and articulated as closely as possible with the schoolroom situation. There is no time for incursion into any of the enticing psychological by-ways, fascinating and suggestive as such inquiry might be. Rather, the psychology of the training school must fashion and temper a practical tool for the hands of the teacher-craftsman.

The general psychology found in the ordinary college curric-

ulum is not this sort of psychology. It has to do rather with the behavior of adults than with that of children of school age. Its practical value for young women teachers-in-training, eighteen and nineteen years of age, is not sufficiently great to justify its inclusion in the curriculum of the training school. The college student will rarely, if ever, encounter the schoolroom situation as a teacher of children; the normal-school student, on the other hand, will, in the natural order of things, encounter exactly that situation. Hence she must be equipped with such information concerning human behavior as is indispensable for understanding something of the nature of *child behavior*.

Unfortunately, however, it has been true until somewhat recently that the training school has been dependent for its textbooks in psychology upon the college (or the university), with the result that the study of psychology in the former institution has been not infrequently of very doubtful value. Normal-school students have occasionally been more conversant with theories of color-blindness, or with theories of emotion, or with absolute and differential limens of sensitivity, or with color zones of the retina, than they have with the fundamental instincts of childhood, or with heredity and eugenics, or with the genesis and growth of the higher thought processes of children. It is an encouraging symptom, however, that within the past few years there have appeared several textbooks in child psychology which have been extremely valuable in the training of teachers for the public schools.

In general, aside from their impracticability for teachers of children, the textbooks in adult psychology which have been available have been unsuited for normal-school students because of the fact that their scientific terminology and style of language could not be readily understood by the students in whose hands they were placed. It has been not unlike giving a kindergarten child an essay of Burke, and bidding him not only *read*, but *comprehend* and *assimilate* and weave into his own life. It should not be forgotten that

first-year students in a teacher-training school were the preceding year high-school students, and that their powers of scientific comprehension have naturally not been greatly developed. College courses in psychology, on the other hand, are often not taken until the second, third, or perhaps fourth year, when the students—who are ordinarily a far more highly selected group in the first place than are girls who enter normal schools—are relatively mature in their thought processes. The course in the normal school, however, must ordinarily come in the first year, in order to prepare the way for courses in educational psychology, principles of education, and other professional subjects subsequently. Nor can it rest upon an experimental basis because of the lack of time and equipment for laboratory work. It must, therefore, be largely built up upon the experience and observation of the students.

In preparing this volume the author has had all these facts, and a great many others, in mind, his ideal having been to make available for teachers of psychology a manual which should contain in a single volume the minimum essentials in psychology for teachers-in-training. Obviously, no exhaustive treatment could be given to any topic without making the text too cumbersome to be easily handled; it has been, however, possible to summarize the outstanding facts and principles of child psychology, and suggest a few carefully selected references for further reading under each caption to supplement the briefer text.

How well the writer has succeeded in these matters must be left to the instructor who makes use of the text.

LAWRENCE A. AVERILL

February 8, 1921

TO THE INSTRUCTOR

THE author of this textbook herewith places in your hands an epitome of his own course in psychology for teachers-in-training. It would be presumptuous for him to recommend just how the manual should be used by other instructors. A word of counsel will not, however, be amiss. It is to be borne in mind throughout that the book deals rather with stating and discussing succinctly the fundamental principles of child and adult psychology than with the application of these principles to the teaching situation. The latter end is to be accomplished in subsequent professional courses in educational psychology and principles of education, after the student has mastered some of the underlying facts of psychology.

At the first of each lesson are included some suggestive topics for the observation period. These topics are closely related in each case to the subject matter of the appended lesson, and, when properly expanded by the instructor, may be made to furnish a very valuable supplementary exercise for the students as they observe from day to day in the practice school.

In the "Topics for Special Study and Report" at the end of each lesson an attempt has been made to indicate suggestive relevant subjects for further inquiry. Only three or four such topics are presented, in the hope that the instructor will find time to have them investigated. It has been the experience of the author that where a score or so of such supplementary questions have been included at the end of chapters they are likely to be neglected for lack of time. He has, therefore, attempted to limit them to a very few of the most important applications of the principles discussed in the lesson.

The same consideration has been responsible for restrict-

ing the number of references for further reading. Only the most directly related psychological literature has been cited, and it is highly desirable that the students be required to familiarize themselves with every reference given. In no other way can they cover in anything like a satisfactory manner the minimum essentials of psychology for teachers of children.

Finally, in order to derive the fullest returns from the use of the manual, the students should be expected to study children extensively and intensively. Throughout the entire course in psychology they should be required to make such free observations as will to some degree at least parallel the classroom work, thus not only rendering themselves more familiar with the behavior of children under various conditions, but at the same time supplying as it were the illustrative material for the class discussions.

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A REFERENCE LIBRARY FOR SUPPLEMENTARY USE IN CONNECTION WITH THIS MANUAL

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PSYCHOLOGY FOR NORMAL SCHOOLS

LESSON 1

INTRODUCTORY

What to look for in the observation period:

1. Evidences of *behavior* as it is defined in this chapter.
2. Greater complexity of response in older than in younger children. Try to classify several groups of responses in the observation class under the groupings thinking, feeling, and action.
3. Children whose environment outside of school may be unfortunate.
4. Any evidence that the teacher is endeavoring to select from all possible influences of schoolroom living only those which may have a beneficial influence over the behavior of the children.

What psychology is. Psychology is the science which seeks to enumerate the chief facts of human behavior, with an attempt to account so far as possible for these facts. You have observed constantly in your daily associations with people that human life tends to express itself in terms of thought, feeling, and action. We may include all three of these types of expression under the single heading: *behavior*. Let us endeavor to analyze this word *behavior*.

Behavior. But do not make the mistake of interpreting behavior in terms of its everyday significance. In popular phraseology, to behave means to conduct one's self in an exemplary manner. In psychology we must give the term a much broader significance. Behavior may be defined in this more inclusive sense as *the response of our organism to all the situations which confront it or can ever confront it*. In the following paragraph we shall see what some of these everyday responses are.

The infant stretches out its hands to grasp the toy; it follows with its eyes the movements of the mother about the room; it coos with delight when it is comfortable; it screams when it is uncomfortable; it tries to place small objects in its mouth; its face shows fear when it is tossed into the air; its cheeks suffuse with anger when its privileges — real or fancied — are interfered with; it clings to the mother and shrinks from the stranger; it babbles and lisps incessantly during waking hours; it keeps its arms and legs in more or less continuous motion; it manifests unmistakable symptoms of jealousy whenever another child is vouchsafed favors which it deems due only to itself; it creeps across the floor, when it is old enough, to explore a tempting object near by; it throws its toys gleefully from it, and then proceeds to recover them almost immediately; its gaze is caught now by a sunbeam shimmering upon the floor, now by a bit of bright cloth, now by the charm dangling from a watch-chain; it stretches out its hands with equal conviction toward the moon or the star or its own face reflected in the mirror; it pulls its toys to pieces in order to investigate the fascinating mechanics within them; it plays with its pets, often becoming very rough, and with unhappy consequences; it claps its hands ecstatically when especially delighted; it plays with its own toes and fingers and clothing; it pouts and laughs and cries by turns; it alternates short periods of waking with longer periods of sleeping; it is now fretful, now cheerful; its attention remains but fleetingly upon any single object, seeking ever new experiences. All of these common responses which you have observed again and again in infants in your own home or in the home of a friend belong properly within the meaning of the term *behavior*, as we have defined it above.

Behavior becomes more complex with increased experience. You must also have observed that the older the infant grows the more active, or *expressive*, it becomes. In earlier infancy its responses were very limited. Can you tell why? But as it passes out of infancy and into early

childhood its range of responses becomes almost limitless. In later childhood its possibilities of expression expand still more, reaching their culmination only with the advent of complete maturity many years later. We may accept as self-evident the statement that human behavior becomes more and more complex with the increased experience which the passing years bring.

The importance of childhood. In dealing, as you will, with the responses or behavior of children of school age (i.e., children between the ages of six and eighteen years) you will be contributing of your influence and personality to an epoch in human life which is perhaps the most significant of all — significant because within it in ever-increasing measure the various responses to the influences which surround and play upon life are being solidified in such a manner that the whole subsequent unfolding and expansion of its powers will be after all but a reflection, a logical consequence, of the behavior habits and attitudes of childhood.

We have said that a study of psychology is a study of human behavior. For teachers such a line of investigation and study is of special importance, for more perhaps than any other agency in the whole environment of the child, with the exception of the home, the school and the life of the school furnish the example and influence out of which the thinking, feeling, and action of subsequent life will resolve themselves. The child's behavior will, in other words, be but an expression in his own life of the influences which surrounded him. His habits, his attitudes, his whole mental, moral, and physical well-being or ill-being in maturity will be only the necessary response to the moulding forces which fashioned his early years.

The value of psychology to the teacher. Psychology, or the study of these innumerable moulding forces, and the effect which they entail, has a double value for the teacher who is to aid in the directing of them. In the first place, it leads her to observe and study the nature of human behavior; it introduces her to some of the great fundamental

truths underlying all response, all behavior; it acquaints her with some of the tremendous influences upon the behavior of mankind that are as old as the race itself. And in the second place, the study of psychology is of significance for teachers in that it is not satisfied merely in discovering or stating facts and principles of human conduct; it is concerned also with searching after the reasons or causes underlying them. Hence universal causes or stimuli are come upon which, being observed to be true of those about us, may be assumed to be true of children generally.

One of the chief ends of the study of psychology by teachers is, therefore, that they may derive from it trustworthy suggestion and assistance in influencing favorably the responses of children in their own schoolrooms. Psychology would both inform the teacher of the nature of the child mind, and also aid her to direct its unfolding with intelligence and sympathy.

As a natural consequence of the study of human behavior, and the forces from which it evolves, the teacher will come to understand that whenever the moulding forces and examples making up the environment of a child are unfortunate or vicious, the behavior of that child will be shaped accordingly. Similarly, she will discover that the reverse is true, and that moulding forces that are favorable will tend to exert a salutary and beneficent influence over the behavior of children.

TOPICS FOR SPECIAL STUDY AND REPORT

1. What is meant by *behaviorism*? What is the relationship between behaviorism and psychology?
2. Observe an infant for ten minutes, paying special attention to his responses of action. Make a written report of your observation.
3. What years of life mark the limits of childhood? Of infancy?
4. Why are the responses of infancy more limited than those of later life?
5. What are some possible consequences of unfortunate influences in childhood? Of good influences? Be concrete in your discussion. Can you furnish actual illustrations from your own experience or observation?

INTRODUCTORY

5

THE LESSON APPLIED

1. Is it possible for such physical factors in the schoolroom as ventilation, temperature, lighting, seating, etc., to have any effect upon the behavior of pupils? Explain.
2. What have you observed to be the effect of fatigue upon your own mental exercise? Might fatigue in school children influence their mental behavior? In what ways does the school endeavor to eliminate the possibility of fatigue?
3. How can the habits, tastes, prejudices, attitudes, etc., of a teacher find reflection in the behavior of the pupils in her charge? Can you trace any of your own qualities to the influence of a former teacher?

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LESSON 2

METHODS OF STUDYING CHILDREN

What to look for in the observation period:

1. Any evidences that the teacher, as judged by the sympathetic attitude which she maintains toward the contributions that the children make to the lesson, is a good introspectionist. Is there, on the other hand, any evidence that she is the sort of teacher whom James had, as described in the Lesson?

Behavior not a narrow term. We learned in Lesson 1 that behavior is the response of the organism to the influences with which one is surrounded. In this lesson we are to consider some of the major ways of studying these responses. Before proceeding to do so, however, it is essential that we appreciate thoroughly the point of view that behavior has as much a mental as a physical phase, and as much a moral as a mental one. It is evident, therefore, that logical thinking or keen imagining are just as truly types of behavior as are building a snowman or playing "Indian," and that telling an untruth or destroying the property of others is no more truly an aspect of behavior than is memorizing a poem or sailing a boat. In other words, as we have already seen, behavior is concerned with every physical, mental, or moral reaction made by the organism in a lifetime. Psychology seeks merely to analyze and to endeavor to account for them. There are several ways of studying these responses, but we shall limit ourselves throughout this discussion to the three methods which can be used with most profit in the study of child mind. These are: introspection, experimentation, and observation. To consider each of these three methods briefly.

Introspection. Suppose you are standing before a painting of rare execution in an art gallery, such, for example, as a landscape of Corot or Raphael's Sistine Madonna. Suppose

now you try to analyze your response to the picture. You discover at once that something within you reacts pleasantly or sympathetically to the situation. Your behavior expresses itself in part in terms of some fine emotion which is aroused. The scene before you may also call to your mind certain of your past experiences which have been such as to enable you to sympathize with the point of view of the artist and with his execution of the piece. A page of history, if the scene is an historic one, may flash before your consciousness, or the words of a poem commemorative of the event may reverberate again in your memory. Scenes and recollections from childhood may flood your mind once more; familiar faces may overcome you. And all this because you chance to pause before a masterpiece in a picture gallery. It becomes evident to you at once that your consciousness is a very complex instrument and capable of the widest possible range of excursion. In any attempt to analyze the experiences and the memories and the attitudes of the moment you find yourself necessarily *looking inward*.

Now you will find that looking inward requires on your part a considerable amount of patience and skill if your results are to be worth while. The human mind, save in its external expressions, is not something that can be dissected objectively with a needle; it is not a thing that can be readily isolated and brought under conditions of objective experiment. It is rather an internal process at which you must look very painstakingly. And even in looking at it the process changes, for you can observe it only through the medium of its own manifestations. This makes introspection all the more difficult, so that in your own efforts to look inward you will need to exercise continual care.

But how will introspection be of help to you in studying the behavior of children? You surely cannot set children to the task of introspecting! No, but you will be better able to understand and direct their behavior by being yourself a good introspectionist. After all we are more alike than we are unlike, and you will be often greatly helped in your

control over and understanding of children by the ability to evaluate a definite situation in the light of your own past experiences in a similar situation. For example, at a certain period in the lives of young people there arises a deep interest in collecting. It may be in collecting stamps or coins or post-cards; or it may be in collecting shells or milk-bottle caps or button-pins. Through introspective memory of your own earlier interest in such activities you will be in a position to guide the collecting interests of your pupils far more intelligently and sympathetically because you have learned to know yourself and your own childish interests and ambitions. Introspection, in other terms, makes a better teacher of you by making you a better observer of children and a more intelligent participator in their joys and sorrows.

Perhaps the following illustration will make the point clearer. In a certain country school, located in the heart of an old Indian region, a teacher was recently conducting a lesson in United States history. There were some half-dozen or more boys and girls in the class, of an age somewhere in the neighborhood of ten years. Toward the end of the lesson the discussion turned upon the types of weapons and other means of defense used by the colonists to protect themselves against the Indians. In the textbook were illustrations of matchlock and flintlock guns, an old block house, and some Indian bows and arrows. Eagerly one of the boys in the class raised his hand. For a time the teacher seemed to avoid looking in his direction. It may have been intentional on her part, for she was perhaps aware of the child's deficiencies and had no wish to exploit them before a visitor. But his insistence was so obvious and compelling that at length she was obliged to give him permission to speak. "Well, James, what is it?" James excitedly pointed to a picture in the book. "My father's got one of them guns up in our shed-chamber!" and the boy's face was aglow with conscious pride. But the teacher gasped. "How often must I tell you, James, to be careful of your English!"

That was all; not a word of acknowledgment or recognition of James's contribution to the lesson! Poor James shrank down in his chair, the eagerness of a moment before submerged in a deep hurt that was plainly apparent in his drooping head and ashamed face.

Now you will understand better why introspective cleverness is a virtue on the part of a teacher. James's teacher was not an introspectionist; she failed to see behind James's ungrammatical response the real impulsion that motivated him: she saw not the thing that James saw, but only the poor language in which it was couched. Her experience was too meager, and her memory of it too unreal, to enable her to appreciate and sympathize with the interests and longings of her pupils. By all means, then, beware of the failure of James's teacher. Cultivate this habit of analyzing your own mental processes to the end that you may better interpret those of the boys and girls for whom one day your cleverness in understanding will mean not only happiness, but mental growth and steady unfolding as well. Especially will you find it valuable to reminisce, so that you can reinterpret the experiences of your own childhood and turn them to account in your teaching of other childhood.

Experimentation. You recall readily enough from your study of general science that whenever you desired to analyze a chemical process you subjected that process to laboratory experimentation. Similarly, you were able to demonstrate a certain principle of physics to be true by regulating the conditions in such a way that it could be established at will. Now in psychology there are also immense possibilities in the field of experimentation, although for the same reason that makes introspection difficult it is not quite such a simple matter as might at first appear. Still, by carefully controlling our experimentation, and so ruling out all irrelevant or variable conditions, we can test out in the laboratory extensively what individual introspection can only demonstrate to be true of one

person — the subject. In the laboratory we can reproduce a given set of conditions at will, and so make possible a much wider and more extensive inquiry into human behavior. The number of subjects is conditioned only by the number of persons available for the experiment. Thus, by increasing the number of subjects, we can arrive ultimately at facts concerning human behavior generally which bear the stamps of scientific exactness.

For example, suppose it is desired to determine the most economical method of learning a piece of poetry. It may be the belief of A that the m method is the superior one, while it may have been B's experience that the n method is more economical than the m . By ruling out all variable factors and establishing a set of constant conditions we can subject the difference of opinion to a definite test in the laboratory, and by multiplying sufficiently the number of observers or subjects we can determine not only which method of learning is the better for people in general, but we can also classify all observers, and therefore all learners, into their respective categories.

For the average teacher-training course, however, it is found usually that there is not sufficient time to venture far into the field of experimentation, fascinating though it undoubtedly is. Indeed the technique of psychological experimentation, while distinctly invaluable as training for advanced work in the study of human behavior, is not indispensable for the teacher of children. Hence we shall perforce content ourselves in this book with the minimum of experimentation, remembering, however, that experimentation is possibly the most exact of all the methods of psychological research.

Observation. The method of studying behavior which above all others is adapted to use with young people is the observation method. The material upon which as master craftsmen we are to work consists of children. This material is fortunately everywhere about us. We are not compelled to make either effort or sacrifice to obtain access to

it. It is to be found in quantity in the homes, upon the playgrounds, on the streets, and even within the school-room itself. We have but to *observe* it.

Now you may have discovered already that not everybody is an accurate observer of the common incidents and objects in his environment. It not infrequently happens that two people react quite differently in their descriptions of a happening, or of a place or person or thing. The following illustration will serve to throw this strange fact about human behavior into relief. It chanced recently that an automobile crashed against a telegraph post at the foot of a rather crowded street. In the accident one of the occupants of the vehicle was very seriously injured, and subsequently succumbed to the shock received. The court which tried the case desired to establish the guilt or innocence of the driver of the automobile. But when the witnesses were summoned a curious lack of unanimity of impression was revealed. One witness stated that the automobile was being driven at a speed of approximately thirty-five miles an hour; another declared the speed to have been not in excess of fifteen miles an hour. One witness claimed that the injured occupant was hurled through the windshield and dashed to the ground; another declared that he was not thrown from the vehicle at all. All of the witnesses, notwithstanding, made their statements under oath. It is apparent that not all of them were accurate observers. It should be said in partial justification, however, that impressions made under stress of strong emotional experience, as was true of the accident described, are apt to be untrustworthy. Still, the fact remains that not all observers are dependable observers.

Powers of observation are fortunately trained with practice in observing. In a certain school building, over the main entrance there is a window of peculiar shape and arrangement of panes. It is semicircular in form, and glazed with red and colorless panes of various shapes and proportions. One day the teacher asked the children to draw from memory a diagram of the window. The most unreal and

fantastic designs were produced. Next day the same request was made, and this time the children — most of whom had taken pains to observe the window more closely in the meantime — did much better. Still, few of them had yet observed the window accurately. But day after day the teacher repeated the problem until soon every child could reproduce very creditably on paper the shape, proportion, and relative size of parts of the entire window. Their powers of observing were improving with practice.

Things to be borne in mind in observing. There are several things to be borne in mind in observing children methodically, and it will be well here to make brief reference to some of the more important of them.

(1) It is always the simple and natural reactions of children that are most valuable in furnishing us information about children generally. It is quite possible, of course, to encourage artificial or *controlled* response by injecting one's own personality prominently into the situation. For example, you might ask a six-year-old child whether it is wrong to tell a lie, or what his ideas of angels are, but there would be great danger of suggestion or constraint, inducing the child to respond more or less unnaturally. It would furnish a much more reliable side-light upon the moral natures of children merely to *observe* their behavior without introducing one's self too prominently. Be on the watch, then, for the free, spontaneous responses, rather than the controlled or artificial ones. You can obtain the sort of observations you are in search of, often, by stealing upon a child much as a hunter steals upon his prey; watch him from ambush, taking great care not to startle him; observe him with his playmates, or alone with his imaginative self; peer out upon him at his play or at his work; in short, keep him within range during the whole period of his waking life, and even during the drowsy sleepy-time you can lie greedily and eagerly in wait in the shadows of the nursery. Any effort, you will soon find, which you may feel disposed to make will repay you a hundred fold.

(2) Be cautious in not allowing the child to suspect your intentions. If he has any reason to doubt the disinterestedness of an onlooker he at once becomes an artificial *behavior*. It happened, for instance, not long ago that a group of young women students, after receiving scant preliminary instruction in the technique of observation, sought out a group of children and, pad and pencil in hand, began to quiz them with all manner of questions! Fancy the response which such a method elicited from the long-suffering boys and girls! These students, you see, were learning from experience to observe properly, as we have intimated above all teachers in training have to do.

(3) But do not assume that pads and pencils have no proper place in the hands of an observer of children. To be most valuable as a finished and dependable piece of work a thing observed must be put on paper in order that it may become the property of other people than the observer himself. Otherwise it is not knowledge in the strict sense of the term, for it exists only in the mind of one person. You should make it a rule, therefore, to write up your observations as soon after making them as practicable. The reason for expeditiousness in this procedure lies in another principle of behavior which we shall study in due time: we tend to forget the details of an experience very quickly, or if we do not forget they become easily disarranged in consciousness and thus much of their true emphasis is lost. To provide against the destruction of the value of a really good observation, therefore, you should take considerable pains with putting it into clear, simple language as soon as possible after its occurrence. Here is where your pencil and pad will indeed be of service, although in the interests of permanency it is always better to use a pen than a pencil!

(4) It is possible either to study a single child intensively throughout a reasonable period, or to make constant observation of groups of children in smaller or larger numbers. It is likewise possible to observe any individual child briefly whenever one chances to be at hand. Each of these three

procedures has distinct value. In the first place, the long-continued, intensive study of a single child will afford the student excellent opportunity to note the progress and changes which mark the child's development, and she will perhaps gain more systematic insight into the nature of behavior than she would acquire from the incidental methods. Secondly, the study of groups of children will demonstrate to the student not only the operation of certain of the social instincts, but also will operate to reveal to the investigator something of the psychology of individual differences, of which we shall have more to say later. In the third place, the incidental method of studying a single child who chances along has the advantage of requiring less time, and of offering a wider probable range of behavior to observe.

(5) Finally, the observation of children is worth while only in so far as, like every other subject of investigation, it is entered into earnestly and inquiringly for the purpose of actually getting information. The true scientist sets about his tasks without any preconceived notions, desirous of arriving at facts. This should be your ideal in the work which you are undertaking.

TOPICS FOR SPECIAL STUDY AND REPORT

1. Why do witnesses of the same event frequently disagree? Can you illustrate the phenomenon from your own experience?
2. Select some object from your environment during a quiet hour, such as a picture or a landscape, and try to introspect. Report your results in writing.
3. Whenever you chance to find yourself in a fit of anger or under stress of fear, introspect carefully with a view of determining the structure of your consciousness.
4. Ask a friend to select from a magazine a colored picture possessing considerable detail. After you have carefully studied the picture, have the friend question you concerning its details, colors, etc. Report the accuracy of your observation.
5. Review Miss Shinn's *Biography of a Baby*. This will give you an excellent idea of a careful study of a single child over an extended period of time.

THE LESSON APPLIED

1. Can an unsympathetic teacher be conspicuously successful in reaching and moulding the lives of boys and girls?
2. If it is true that the observational powers of the average adult are apt to be wholly undependable, what should you infer to be the case with the fidelity of children's observations?

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LESSON 3

THE NERVOUS SYSTEM: STIMULUS AND RESPONSE

What to look for in the observation period:

1. Evidences of distracting stimuli in the schoolroom, and the responses in the children which they arouse.
2. Whether such matters as the location of the school building, arrangement of rooms, etc., show any indication of attempt on the part of school authorities and architect to rule out as far as possible all distracting stimuli.

The cell the unit of all living matter. You will remember from your physiology that the unit from which all organisms and all parts of organisms are evolved is the cell. It will perhaps be well, before we continue our inquiry into the nature of human behavior, to review very briefly the chief facts concerning the relation of the cell to the nervous system and of the nervous system to behavior, for it must have become apparent to you by this time that the pathway across which our human behavior finds expression lies within us. This internal pathway is by no means a single route, but is made up of a great network of nerve cells and their processes which penetrate to every part of the organism, and link the parts up in such a way that unity of control results. For the purposes of clearness we may liken these nerve routes to microscopic telegraph wires running through innumerable relay stations.

The structure of the nervous system. The unit of the nervous structure is the *nerve cell*, just as the unit of bone structure is bone cell, or the unit of skin structure the epithelial cell. This nerve unit or nerve cell is essentially similar in structure to the bone or epithelial or other cell. That is, it contains a *nucleus*, a mass of *protoplasm*, and a *cell wall*, the whole mass being microscopic in size. Project-

ing from the cells proper are multitudes of prolongations to which are given the name *nerve fibers*. Most of these protoplasmic prolongations branch and subdivide indefinitely; these branches are called *dendrites*. A few of them do not present such marked arborization and are much longer than the dendrites; they are called *axons*. The complete nerve unit — i.e., the cell and all its branches — is called a *neurone*. These neurones, of course, are microscopically close together, and their processes or fibers interlace not unlike the upper foliage of juxtaposed trees. The *synapse* is the region where the branchings from one nerve cell appear to join

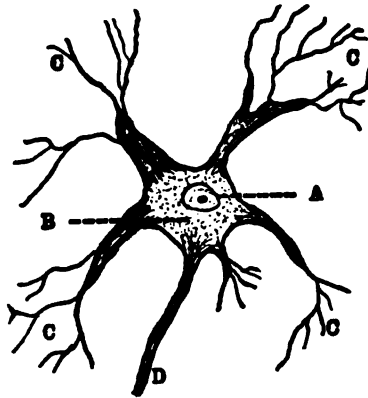


FIG. 1. A NEURONE

Showing dendrites and part of axon. *A* is the nucleus; *B*, the protoplasm; *C*, dendrites; *D*, axon

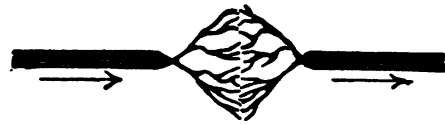


FIG. 2. A SYNAPSE

ing along one nerve bridge the gap, or synapse, and continue along the appropriate neighboring nerve until the end desired is attained.

For the most part the nerve cells are grouped together in the *central nervous system*, that is, the brain and spinal cord. Occasionally, however, smaller masses, called *ganglia* (singular: *ganglion*) are juxtaposed in other parts of the body where they can more conveniently control certain physiological functions.

The function of nerve fibers. In general the nerve fibers have three functions to perform in the physiological furtherance of behavior. One group, which we may call *afferent fibers*, are for the purpose of receiving messages from the exterior sense organs, although many of them come from the internal organs of the body. The function which afferent fibers have to perform is, therefore, the first step in the initiation of reflex action and of sensation, externally or internally aroused, since it is these fibers which transmit outer or internal impulses to the interpretative centers within the gray matter. We shall see in a later lesson just what we mean by reflex action, and how the afferent fibers can arouse both it and conscious response.

A second group of nerve fibers, called the *efferent fibers*, are those prolongations of the nerve cells which convey messages away from the nervous system and into the muscles and glands, resulting in movement or action. The efferent fiber is, therefore, the last nervous step in the production of reflex action; it is also the logical avenue through which the results of sensations are discharged into action or response. The efferent fibers terminate always in muscles or glands.

Supplementary nature of the afferent and efferent fibers. We are in a position now to understand the supplementary nature of the afferent and efferent fibers. According to their derivation from the Latin, afferent (*ad* and *ferre*) implies carrying toward, while efferent (*e* and *ferre*) implies carrying away from. And this is precisely the significance of the two terms as used in the nomenclature of the nervous system. One group brings sensations in from the exterior, while the other group projects movements outward to and about the exterior. The first group are, therefore, *sensory* nerve fibers; the second group are *motor* fibers. Take a very simple example of nervous response by way of illustration. Suppose a few grains of pepper are blown past the nostrils. Immediately you respond by sneezing — it may be several times. What has actually taken place is this: a small group of afferent fibers ending in the nasal passages has been

stimulated by the pepper, and at once the experience is flashed inward in the form of a sensation. Almost simultaneously a group of efferent fibers reacts to the impulse brought in by the effectors and nearly every prominent muscle of the trunk is violently discharged. The term *reflex arc*, or *sensory-motor arc*, is often applied to this simplest of nervous reactions. Can you suggest five other illustrations of this supplementary and immediate relationship between the afferent and the efferent fibers?

The *adjustor neurone*. We said a moment ago that there are three functions which nerve fibers have to perform. We have already referred

to two of them. The third is an intermediary function between the work of the afferent and that of the efferent fiber. This third type is often spoken of as an *adjustor*, or *association*, neurone. In the example just given, you observed that a far greater number of motor or efferent neurones must have been in discharge than sensory or afferent ones. The fact is that one afferent neurone makes connections with a great number of motor units by the intermediary of several adjustor neurones. In this way nervous connections between a minimum number of sensory elements and a maximum number of motor elements may be secured. If now you will pause to reflect for a moment you will be overwhelmed with the tremendous possibilities of training not alone the faithfulness of the sensory neurones nor the

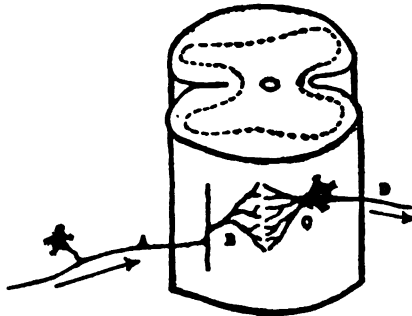


FIG. 3. THE SENSORY-MOTOR ARC

A represents the sensory fibers carrying message inward to the central nervous system; B, the synapsis between sensory and motor elements; C, a motor neurone lying in the ventral horn of the cord; D, axon projecting the motor impulse outward toward a muscle or a gland

skill of the muscles, but especially of the association neurones which, on the higher level of intelligence and will, represent the great physiological foundation of human consciousness and behavior.

Stimulus and response. We have had occasion frequently thus far to refer to outside influences or forces playing upon us in determining our behavior. It is time now for us to become familiar with the terms *stimulus* and *response*, and to employ them henceforth in our discussion of behavior. In the example just given, the particles of pepper floating about in the air may be said to have been the stimulus which caused us to sneeze; in the same way the act of sneezing may be said to have been the response which we made to the stimulus. We assume, of course, that the connection between the stimulus and the response was effected by the adjustor neurones, but in our observation of children we are particularly concerned with studying the stimuli which influence them and the response which they make to them without attempting to trace internally the physiological circuits of their responses. Given the stimulus and the response we can calculate the part played by the adjustor mechanism with sufficient accuracy for our purposes. Let us look at some other illustrations of this same process of stimulus and response.

Illustrations from infancy. When the mother moves about the nursery the eyes of the infant follow her wonderingly. Her movements are the stimuli which produce the response: turning the head about. The same stimulus may also cause the infant to smile or cry, to prattle contentedly or to cower back in alarm, or to express itself in many other ways. The opening of a door becomes the stimulus that causes it to respond by turning its eyes in the direction whence the sound comes; the sight of a toy impels it to stretch out its hands to grasp it; the lullaby song produces drowsiness and perhaps even slumber; the passing cat causes a hand to be outstretched to feel or caress it; sight of the bottle may precipitate a great number of responses, all concerned with the

taking of food; uncomfortable clothing incites to fretfulness, as do also indigestion and physical ills. Can you extend the list?

Illustrations from adult life. A loud explosion causes you to jump, and perhaps cry out; a flash of lightning may impel you to close your eyes tightly, or to tremble in fear, or to indulge in compensating jest; a bitter or sour taste is reflected instantly in a wry face, as is also an unpleasant odor; a pin prick causes you to straighten up quickly, and perhaps put the injured finger in your mouth; a thrilling discourse or sermon may incite you to this or that course of action; an interesting story will find unmistakable expression in your face, as will also an uninteresting one; a good example at a fortunate moment will encourage you to react creditably to a vexing situation. Try to think of a great many other illustrations from your own everyday experience of the inevitable sequence of response from stimulus.

Professor James has very aptly applied the antonym *impression* and *expression* to such situations as mentioned above. Can you justify his statement to the effect that "there can be no impression without expression"?

The basal condition of all response. From what we have said concerning the nature of the nervous mechanism it follows that the behavior of children is a factor dependent wholly upon the stimuli of, adjustments resulting from and responses to their environment. Physical habits, mental attitudes, moral values are all conditioned upon these factors. Here is one of the most basal of all laws of development. The influences and forces of surroundings, elaborated upon or worked over in the neurones of the great central nervous system, pass over into the sorts of lives we all lead. It is a transference of forces just as inevitable and just as inescapable as life itself. On the physiological side our bodies receive food, reduce it to a usable state, and then it passes into movement and action and vitality. Just so on the expressive side, the child's mind absorbs the stimuli offered, interprets it in terms of possible utilization, and then responds logically and invariably to its impulsions.

TOPICS FOR SPECIAL STUDY AND REPORT

1. Another pair of antonyms frequently applied to *afferent* and *efferent*, or *sensory* and *motor*, are *centripetal* and *centrifugal*. Account for the fitness of the two terms.
2. Write out and bring to class a possible explanation of the activity of the sensory-motor arc in coughing, or in winking the eyes when a foreign body is precipitated near them.
3. Observe an infant for ten minutes, and report upon his responses.
4. Be ready to place on the blackboard and explain a diagram illustrating the reflex arc.
5. Study pages 26-28 in chapter 3 of Wm. James's *Talks to Teachers*, etc. Do you find confirmation of what you have studied in this chapter? Explain.

THE LESSON APPLIED

1. Every stimulus results in some manner of response. Can you think of any stimuli in the schoolroom which might tend to produce undesirable responses or to interfere with the fixing of desirable ones?
2. Would it be probable that the responses of pupils to a lesson which was lively, snappy and interesting would be more valuable than might be the case with a lesson that dragged and was uninteresting? Is interest, then, an essential if responses to stimuli are to be most enduring and worth while?
3. To what extent is it an essential to unhampered and appropriate response on the part of a pupil that the terminals of all afferent fibers (i.e., the sense organs) be functioning normally?

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LESSON 4

LOWER FORMS OF BEHAVIOR

Irritability of plants and lower animal organisms. It is well to pause here, before continuing our inquiry into the nature of human behavior, to refer briefly to some of the responses of lower forms of life; for behavior, in the sense of response to stimuli, is by no means limited to human beings. The sense organs of animals and the external surfaces of plants are alike subject to *irritability*; i.e., to stimulation arising from certain surrounding forces. Davenport classifies these forces as follows: (1) chemical substances; (2) water; (3) density of the medium; (4) molar agents; (5) gravity; (6) electricity; (7) light; and (8) heat. In other words, whenever an irritable organism is subjected to stimulation from any appropriate one of these eight agencies, it responds in a definite way. This response is a form of behavior, whether it be a response made by a plant or by an animal organism.

The tropism. The reactions made to external stimuli are far less complex in these lower forms of life than they are in human beings. The reason for this is obvious, since the responding apparatus — i.e., the nervous system — is highly specialized and highly complex in the latter, whereas in the former there is either no distinction between the afferent and efferent elements, or else the connection between the two is physiologically immediate and direct. For example, the slow turning of the sunflower to the progress of the sun across the sky is after all probably a relatively simple process, owing to the relatively simple structure of the sunflower.

The term most generally applied to such direct responses as these is *tropism*, a word coming from a Greek infinitive meaning *to turn*, and indicating in its derived significance all possible lower forms of response to the eight agencies men-

tioned above. A few illustrations of tropisms will make the matter clearer.

Phototropism. In the case of the turning of the sunflower always toward the sun we have an instance of what may be called *phototropism*, or turning toward the light. It is more correctly called *heliotropism*, or turning toward the sun. The stimuli are obviously the sun's rays, while the response, made possible by an irritable organism pervious to the chemical influence of the rays, is the constant turning. Another illustration of phototropism is seen in the moths which fly at night. You have seen scores of them attracted around the illuminated bulb, and perhaps even into the open flame to their own destruction. The explanation here is, as in the case of the sunflower, that the chemical elements of the moth's organism are responsive to the light rays from the lamp. In this case the tropic response may be positively injurious to the life of the species.

Geotropism. Another interesting variation of tropic response is found in *geotropism*, or the tendency of certain organisms to move toward or away from the earth. The first of these, the tendency to move toward the earth, is known as *positive geotropism*, while the tendency to move in the opposite direction has been called *negative geotropism*. Suppose, for example, you plant a seed in the ground. In a few days you will find the tiny shoots of the stalk pushing their way upward. If now you dig carefully around the plant you will find that its roots are burrowing deeper down into the earth. The first of these responses is an illustration of negative geotropism, while the second illustrates the opposite, or positive geotropism. It will be idle for us here to inquire into the explanation offered to account for the negative response, which appears to be a reversal of the law of gravity. The secret of it is hidden away in Nature's strong-box. It is not so difficult to arrive at a possible explanation of the positive response. In any case, the value of both types of geotropic response is at once apparent.

^ The two sorts of tropism mentioned will be sufficient to

help you to understand that the eternal law of stimulus and response, about which we studied in Lesson 3, takes its origin far down in the biological and botanical series, and is a form of inevitable behavior as old as the cell itself. Human life, or human behavior, represents merely a more complex and variable range of responses, due as we said to the interposition of a complex nervous system and the increased possibilities of reaction thereby made possible.

Automatic acts. It is true, however, that there are certain invariable forms of reaction to stimuli, even in animal life on the higher levels, which are more or less in the nature of determined responses; i.e., which appear as the inevitable reactions to certain stimuli and so are little higher than tropisms in degree of complexity. In fact, physiologically, about the only distinction between the tropic responses of the lower forms of life and the simpler responses in the higher organisms lies in the fact of the greater specialization of structure and muscular or glandular function in the latter. In the tropisms there is no evidence either of specialized function or of nerve tissue, the response being, as we said, a simple, direct, and inevitable adjustment due to chemical irritability. In human beings, however, and in animals generally, are going on certain internal processes over which the brain exercises no control and which are in full operation from the earliest days of life. These are the so-called *automatic acts*, and include all such bodily functions as digestion, secretion, breathing, circulation of the blood, etc. Such acts result from internal stimuli rather than from chemical forces external to the organism, as was true of the tropisms, and have as their chief function the preservation of the physiologic processes upon which life and health are dependent. They represent, however, an aspect of response considerably higher than the tropism inasmuch as they are dependent upon relatively complex nervous structure for their operation.

Reflex acts. A second type of human behavior on a low level may be included under the term *reflex action*. In this

response the stimuli are external to the organism rather than internal, and produce periodic responses which are beneficial in protecting it from injurious forces originating outside of it. Among the more common reflex responses may be mentioned the winking of the eye to protect it from impact with a foreign body, sneezing, coughing, and the like. In the case of winking the eye, for example, the stimulus from without may be a particle of dirt, or an insect, or a chip flying toward one. The response is as instantaneous as it is effective. The lids are drawn hastily down and the delicate membrane of the eyeball within is saved from injury. Or again, suppose the wink has not been quick enough, or the object approaching has been too small to excite the customary response, so that the foreign body actually gets into the eye. Immediately it furnishes the stimuli for plunging the muscles of the eyeball, as well as the neighboring facial muscles, into violent and persistent reaction until the particle has been removed by the action of the tears which have also been reflexly released from the lachrymal glands. In this and in other reflex responses the higher centers are not called into play, but the lower centers take matters into their own hands, as it were, and incite the muscular and glandular responses.

Both the above forms of behavior are relatively simple. The stimulus passes over directly into the response, the only difference being that in the automatic act it was an internal stimulus which set off the response, whereas in the true reflex the stimulus was supplied from the outside. But in either case it is the simplicity and directness of the ensuing response that are the important things: automatic and reflex acts travel as a rule across the simpler reflex arcs.

Instinctive response. But the sensory-motor arc is capable of transmitting far more complex responses than either the automatic or the reflex act. The next higher form of response is the *instinctive response*. Instinct is a very difficult term to define in its broadest and fullest significance. We may perhaps best describe instincts as being inborn ten-

dencies to respond to definite stimuli in definite ways which are fairly typical for all members of the species, and with which there is usually connected some form of emotional experience. For example, consider the play of children. The play instinct is apparently inborn in all of us, and its satisfaction is a matter of intense pleasureableness to us. Take the child to the seashore and he becomes at once engrossed in digging wells and tunnels in the sand, and in hurrying hither and yon with his pail and shovel. Take him to the playground and immediately his interests are divided between see-saws and swings and sand piles. Give him toys and he will amuse himself for hours with them. Set him down in the midst of other children and he will play so hard and so long that home and even supper are quite forgotten. What is this tremendous power which so rules the activities of the child? Whence comes it, and in what several ways does it manifest itself? These are questions with which we shall concern ourselves in the next few lessons. In the meantime, suffice it to say that the instincts exert far more influence over the physical growth and moral and mental development of all of us than any other force in our lives, internal or external.

TOPICS FOR SPECIAL STUDY AND REPORT

1. Describe two other kinds of tropism.
2. Of what value to the organism are automatic acts? Mention a half-dozen such responses.
3. Name some additional reflex responses.
4. Describe what is meant in the text by "higher centers" and "lower centers."
5. What is the important structural difference between organisms whose responses are called tropisms and those whose behavior is based upon instinct?

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 Parmelee, M. *The Science of Human Behavior*, p. 81; also pp. 88-116.

LESSON 5

INSTINCTIVE BEHAVIOR IN ORGANISMS BELOW MAN

Present stimulus and past experience. We described instinct in our last lesson as an inborn tendency to react in definite ways to definite stimuli. This tendency is no more peculiar to the human than it is to the lower animal organism, although in the latter behavior is more or less limited by structure. It has often been pointed out that an organism's response must depend upon two factors — the present stimulus and past experience. Now in the case of all forms of life, higher or lower, past experience has been of tremendous importance. Take the bird family, for instance. We have no exact information as to how long birds have existed on the earth, but we do know that it has been a great many thousands of years, and throughout these long ages their organisms have been accumulating a vast fund of experience. We do not need to assume rational consciousness in the bird, however, to explain this slow and apparently purposeful accretion of experience. It is rather to be explained on the ground of natural selection. Suppose, for example, there had existed many thousands of years ago a large number of a certain species of bird. Suppose also that the climate of the region in which they lived suddenly became severe. Now doubtless many of them would have perished, but some of them, in flying blindly about, would chance to work their way into a region where the climate was milder. It is obvious that only such birds as succeeded in reaching a more equable climate would survive. The fact that they did succeed is to be explained on the ground of chance. But once having escaped the rigors of a cold climate there was doubtless registered in the nervous systems of the birds traces of their experiences, which natural selection seized

upon and perpetuated, thus giving rise to the migratory instinct. You can now understand better why the past experience of an organism is one determinant of its present response. Can you think of another illustration of the development of an instinct from an original chance response?

Why instinctive behavior persists. In the case of the instinctive response, then, the past necessities have become so indelibly stamped upon the nervous systems of species that they are now a factor in directing and ordering the existence of such species. And this is often the explanation of the survival in us of certain instinctive tendencies which appear no longer to be of value to us. Consider, by way of illustration, the instinctive response of collecting common among young children. At some time in the struggle for survival in the race it was an essential of continued existence to gather berries for sustenance and dry branches for warmth — so necessary indeed that the response fixed itself upon the human race as an instinctive reaction, although its persistence is no longer a physical necessity for living. In a similar way the tendency of the child to put objects into his mouth may be explained as the earlier compulsion of the race to test and try out all manner of possible edible substances. It appears, therefore, that what persists in us as instinctive tendency existed sometime in our unrecorded past as a necessity which formed the basis of the operation of natural selection. And it is to these instincts that we are now to turn our attention as offering in large measure the explanation of the present behavior of lower animals.

Certain instinctive responses in birds. We have already referred to the *migratory instinct*. You have always been aware of the fall pilgrimage of many of our northern birds to the warmer southland, and of their subsequent return in the spring. The inner force which impels them to direct their flight invariably into the warmer south rather than the still colder north is, as we said before, due to the age-long modification of their nervous systems through natural selection. Exactly what share the present stimulus of

increasing coldness has in their emigration we do not know. At most it is only very slight as compared with the force exerted by inner necessity, based upon a long past. Often the same birds which emigrate in the fall immigrate again to the same locality in the springtime, and it may have been your observation that the same songster which built his nest in your back yard last year returned this spring to the same tree, and perchance even to the same bough. It is a sort of homing instinct which is more or less intimately associated with the migratory response.

Another instinctive form of response in birds is found in their nest-building. Certain species build always on boughs; certain others build under eaves or in vacant buildings; still others choose always the tall grass or the swamps. Can you explain why the selection of each of these different sites for nests may have originated many bird generations ago?

You have doubtless watched some industrious bird absorbed in his nest-building. You noted the care with which he selected the bits of mud, or dried grass, or straw, or twigs, and the skill with which he wove all his materials together into a comfortable nest wherein might be laid and hatched the eggs which were to perpetuate his kind. And year after year — always at the appropriate season — the same nest-building instinct comes to the fore again. Some all-compelling force, some dominant inner compulsion, actuates the behavior of birds in a special manner during the nest-building and mating season. The response is higher than the chemical response of the tropism, higher than the reflex, for the tropism and the reflex are immediate and direct. A relatively complex nervous system is rather the channel through which this higher, instinctive response operates. The directness of the simple reflex arc is interrupted by the interposition of many finer afferent, efferent, and adjustor nerve elements which make for more mediate and prolonged action. The modifications wrought in the nervous system by past experience serve to complicate the nature of the response.

The Columbia River salmon. Professor Pyle records an especially interesting illustration of instinctive response as found in the life-history of the salmon. During the greater part of the year this fish haunts the region about the mouth of the Columbia River, but with the approach of the spawning season the fishes begin to make their way up from the ocean's mouth to the quieter, more placid headwaters of the river many miles inland, apparently that the young fish about to be hatched may be safe from the deep-river prowlers below. Now the smooth course of the Columbia River is frequently interrupted by cataracts and torrential waterfalls, down which the waters plunge seethingly. But the inner compulsion of the salmon is too great to permit of faltering. Gathering up all the energy in their muscular bodies they leap high upward out of the water in a blind endeavor to pass the foaming cataracts. If a first effort fails and they fall backward into the torrent, they swim idly about for a time in order to recover their energies; and then they make the great leap again and again until either they succeed in reaching the smooth water above or perish among the rocks and shoals of the rapids. It is said that at this season the Columbia is filled with the dead bodies of salmon floating down the river to the great ocean.

What shall we say of a strength, a persistence, a necessity which impels these strange fishes to jeopardize even their lives in an endeavor to reach the quiet headwaters of the Columbia? You can appreciate now something of the insuperable strength of the instincts in lower organisms, and how blind and unmodifiable they are.

Other common instinctive responses. But we do not have to go so far as the Columbia River salmon to find instinctive forms of behavior in the lower organisms. The self-preserved instinct, evident in the mouse scurrying to cover; the homing instinct of the pigeon or the horse; the food-getting responses of animals; the maternal instinct of the cow or the sheep or the mare or the cat; the play instinct in the pup or the kitten; the fear response of the fowl, hastening

into the bushes at the approach of a hawk — all these are common types of instinctive behavior. Can you think of any activity of animals that has other than an instinctive basis?

TOPICS FOR SPECIAL STUDY AND REPORT

1. Be prepared to discuss the theory of natural selection or the survival of the fittest. (See reference 1, below.)
2. Is the gang instinct, so common in boys, essential to the preservation of the race? Can you explain its origin?
3. What is the significance of the expression: "animal intelligence"? (See reference 2, below.)
4. Give a possible explanation of how natural selection may have operated to impel the salmon to hatch its young in the headwaters of the Columbia River rather than at its mouth.

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LESSON 6

INSTINCTIVE BEHAVIOR OF CHILDREN

I. General Physical Activity

What to look for in the observation period:

1. Whether some children in the room are more active than others. If possible, attempt to account for an unusual amount of activity or of sluggishness on the part of any child or children.
2. Evidences of the slower mastery of accessory movements than of fundamental.
3. Whether the teacher tends to repress her children, or whether she strives sympathetically to encourage them to express.
4. What sorts of sports or games or other forms of relaxation seem to be favorites at recess time. Is this as you would expect it to be from your study of Lesson 6?

Learned and unlearned behavior. We said in our last lesson that there is probably no other agency, internal or external, which exerts such profound influence over behavior as do the instinctive tendencies. We shall now proceed to a brief examination of some of the more prominent of these responses as they appear in the lives of normal children. In passing, it may be well to state that all human activity is divisible into two categories — *learned* and *unlearned*. By the former type we understand those of our reactions which are as they are because of the influence exerted over us by our individual past experience. For example, you can readily understand that your thinking, your attitudes toward problems of life, your ability to play the violin or operate a typewriter, are all modes of behavior resultant from your environment, and differentiate you personally at once from every other individual. Such forms of behavior are termed *acquired, or learned, behavior*. Can you think of several

other forms of response which you make that are similarly the result of your own experience?

We shall consider this higher aspect of behavior in due time. For the next few lessons, however, we are to concern ourselves with the *unlearned, or innate*, tendencies which we classified in the last lesson as instinctive behavior, that is, tendencies to behavior which are handed down to us through the experience of the race as opposed to any ephemeral modifications which we may personally exert upon our behavior in our own lifetime.

We said in an earlier discussion that all behavior is conditioned upon two forces: the past experience of the organism and the present stimulus confronting it. The first of these forces in order of development must be the past experience, not of the individual but of the race. In other words, two factors go to make up the content of the past experience of any organism: — first, the contribution of the earlier progenitors of the organism, which we may call the race; and secondly, the contribution of the present individual. Professor Thorndike includes all possible racial experiences, unmodified by training, as constituting the *original nature of man*. By this, he means the pure, naked, instinctive responses of the organism before they are in any way changed or modified by the experience of the present individual. One of the most interesting as well as the earliest of these original, or unlearned, forces in the human infant is the *tendency toward general physical activity*.

General physical activity. If you were to attempt to enumerate all the physical responses of an infant during an entire waking day you would find when night came that you had a very remarkable as well as a very extended list. Among the responses recorded would undoubtedly be the following: turning or shaking or nodding or tossing or wagging the head; turning the eyes about; exploring with the fingers of one hand the fingers of the other hand and the feet; grasping toys and small objects within reach; pulling, tearing, twisting, and folding paper; putting all manner of

small objects into the mouth, including, as we have seen, its own clothing or hands or even feet, kicking or tossing its feet and legs in the air; waving its hands and arms about; rolling its body from side to side; throwing its toys upon the floor; creeping or rolling upon the mat; manipulating and investigating and exploring toys and other available small objects; cooing, babbling, prattling, shrieking, and otherwise exercising the vocal organs (vocalization); rocking from side to side, and hitching the body backward and forward; rubbing and stroking and feeling (manipulation); squeezing and grasping and fingering; pounding and pressing and lifting; and a score more responses of a purely physical character.

This great multiplicity of physical response appears to be nature's way of keeping the muscles in trim until such time as the child is physically able to play more actively and purposively. You have doubtless noted that the baby who is continually engaged in this random physical activity is usually the baby who is healthy and happy, whereas the baby who is quiet and sluggish in his movements is likely to be the baby whose condition of digestion, or nutrition, or general health is inferior. This same rule applies to us all more or less exactly. So long as we are in perfect health there is a natural exuberance, which is no longer so apparent when health becomes impaired and the body begins to deteriorate.

Its origin in primitive life. If we look for an explanation of the origin of this tendency to general physical activity in primitive man, we shall arrive at the inevitable conclusion that in primitive life, beset as it was with perils, the period of infancy must have been very much shorter than is true in the case of civilized society, and that the human infant had very quickly to adapt itself to an environment in which food was scarce and natural enemies numerous. It must therefore have been necessary for the infant to be physically competent to rely upon itself tolerably soon after birth, as is true of most animals. The present instinctive tendency to

physical activity is therefore based undoubtedly upon an earlier necessity in the life of the race.

Fundamental to accessory. An interesting question confronts us here as to the order in which these physical responses develop. According to the physiological principle which states that *all muscular control develops from the fundamental to the accessory*, which appears to be the commonly accepted explanation although it is variously interpreted, control over the larger movements precedes control over the smaller, more restricted movements; that is, the child learns to control the smaller muscles only after he has learned to manage the larger ones. It is very obvious, for example, that before you learned to play the piano with your fingers, you had first to learn to control the larger arm movements. If the baby chanced to be brought near to the piano, it will manifest keen delight in drumming upon the keys with its fists; gracefulness and fineness of touch, however, will be as lacking as will critical appreciation of the sounds which are produced. We just said a moment ago that one of the characteristic physical responses of the infant in the cradle is the waving and tossing of its arms and hands in larger movements. True, it also fingers and manipulates its toys to a certain extent, but all its finger movements are awkward and ungainly in the extreme. This is, in itself, an illustration of the same principle of priority of muscular development. The same backwardness in the development of the smaller, finer movements is seen in the growth of control of the feet. From birth on the child is more or less master of the larger muscles of his legs, which he can toss about incessantly, but it takes months of experimenting before he can learn to coördinate the same muscles in balancing, standing, and walking, and months more before he acquires much gracefulness of locomotion. The same may be said of his vocalization. From its first hour, the infant is able to produce vocal sounds without number or measure, but it cannot coördinate all its vocal potentialities into articulate speech for many months, and it is years before it becomes

complete master of its voice in all the niceties and finish of what we may call *speech*.

One other illustration will suffice. You may at one time have attempted to help a younger brother or sister to learn to write. If so, you can appreciate well how awkward and clumsy the child's hand is for many, many lessons, and how slowly it is that he succeeds in gaining a measure of control over the finer movements of his own muscles. During all this period of slow evolution, however, the same boy could doubtless run fast, play hard, and use his vocal organs to their very limit in the larger way.

To say, then, that the order of development of muscular control is from fundamental to accessory means simply that the larger, fundamental movements are the first in order of development, while the finer, more artistic, or accessory movements do not come under control until somewhat later. Do not confuse fundamental and accessory necessarily with the *size* of the muscles involved. It is not so much that the larger muscles come first under a reasonable degree of control: rather the larger, freer, less confined and restricted movements of these muscles evolve first. It is after all the same vocal cords, and the same arm muscles that come earliest under control as fundamentals that are concerned with later, finer responses as accessories. The change brought about by time and experience is brought about not so much by increased skill in using the smaller muscles (although in many cases that is a factor) as by increased skill in confining the larger movements into very minute ranges of contraction, as, for instance, in the case of learning to write.

Childhood an age of activity in the larger sense. You have frequently heard quoted the old Puritanic saw, "Children should be seen and not heard." As though a child, filled to overflowing with the instinctive necessity to *act* could ever be expected to do otherwise than express himself in terms of activity! Do not expect too complete physical control, therefore, from your children. It is just as natural

and just as necessary for the child to be heard as it is inevitable that he will be seen. Not repression, but better and more sympathetic means of expression are what children demand. This does not necessarily mean that noise and clamor are the only forms of response possible in order to satisfy the inner impulsion to general physical activity — although by all means noise and clamor are periodically essential to healthy childhood. They are a sort of safety-valve to the exuberance within. What it does mean is that we need to make greater provisions for self-activity of children than we have felt needful in the past. Can you think of any recent developments in schoolroom practice which seem to indicate an increased appreciation of this need?

TOPICS FOR SPECIAL STUDY AND REPORT

1. In what sense is "unlearned behavior" the learned behavior of the race?
2. Observe an infant for ten minutes, bearing in mind what you have learned concerning the instinct of general physical activity.
3. Compare the duration of the period of infancy in the cat, bird, horse, etc., with that in man. What has been the reason for the increased length of the period in the case of the human infant?
4. How do skill, or dexterity, or gracefulness in any art or industry develop?
5. Cite other illustrations of the "fundamental to accessory" principle.
6. What is meant by *self-activity*?

THE LESSON APPLIED

1. In what way is our knowledge of children's natural tendency toward physical activity being brought to bear upon schoolroom methods and educational aims? How have schools changed in this respect since our grandfathers' day?
2. Why is learning to write apt to be such a laborious process?
3. Why are drawing and manual training valuable subjects in the curriculum? To what end are such school activities as dramatization, pageantry, singing, declamation, etc., valuable in the training of boys and girls?
4. Is there any *mental* corollary to the fundamental-accessory theorem? That is, do children grasp certain outstanding facts and principles before they can comprehend derived and intricate truths? Give illustrations.

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2. Thorndike, E. L. *Educational Psychology*, vol. 1, *The Original Nature of Man*, chap. 1, also chap. 10, especially pp. 135-38.

LESSON 7

INSTINCTIVE BEHAVIOR OF CHILDREN (*continued*)

2. The Migratory Response

What to look for in the observation period:

1. Whether there is any evidence that the children are making in connection with any of their studies "mental pilgrimages of the imagination" of the sort mentioned in this lesson.
2. Evidences of interest in the welfare of other peoples of other lands.
3. Any aspect of the school life as the children know and live it which might tend to induce some of them to dislike school and perhaps play the truant often.

The *Wanderlust*. We have already seen that the migratory instinct is a common form of response in birds. We are now to study evidences of the same response in human beings, and especially in children. This instinct has a periodic, seasonal appearance in birds, coming into prominence when the cold weather begins and recurring in the following spring when the north has become milder again. In human beings, however, the migratory response has to a considerable degree lost its seasonal aspect, and appears as a general and more or less permanent tendency to delight in migrating. *Wanderlust*, or love of wandering, is the very expressive term which the Teutonic tongue applies to this interesting form of behavior.

Early manifestations in infants. Its earliest appearance in children is seen as far back in the life of the babe as it begins to manifest eagerness to explore the wonderland beyond its own dooryard, and many a mother has called and searched frantically throughout the neighborhood in an attempt to locate the three-year-old who has for a moment been left without surveillance. You have observed the many ingenious devices to "hold" very young children in

captivity within their own homes, from the primitive cord attached about its waist and fastened to a doorknob, to the kiddie-coop or the piazza bars! But in spite of all this effort and solicitude on the part of the parents the babes often break leash and disappear from immediate view, for all the world like gleeful animals which have escaped from their keepers. Something of the same primitive delight in wandering is seen in the eagerness which infants and very young children manifest in being wheeled out in their carriages, although it is probable that they are quite as contented in being trundled up and down and back and forth in the same familiar street as they are when being conducted along new and unfamiliar streets. The explanation here is partly that they enjoy the rhythmical motion of the carriage and the changing prospect, and partly that to their somewhat sluggish perceptions there are always sufficient new and novel stimuli even in the same short street.

Prominence in older children. But as the young infant grows older the strength of its migratory instincts begins to increase inordinately, and sometimes alarmingly. You are familiar with Mark Twain's inimitable creations of childhood, Huckleberry Finn and Tom Sawyer, and you remember how one day, in company with a boon companion, they stole away from home to seek their fortunes on the great sweeping Mississippi. It was a response as natural and normal for boys to make as breathing. The lure of the distant, the enchantment of the new and strange, the call of the unknown and the untried are motives of enormous driving force in the lives of children, and especially, it appears, of boys. It may not find its expression in launching a raft on the Mississippi and sailing away to become buccaneers, but some less spectacular form of expression it does seek. You are familiar with it in boys who run away from school, or "play hooky," a form of behavior springing quite as much from the inner call of the woods, or the field, or the stream as from lack of sympathy with the work of the school. You are familiar with it, too, in the frequent

recurrences in some children whom you doubtless chance to know of running away from home. Often this absence from the home may be of very short duration — perhaps an hour, two hours, half a day. Frequently, however, children with unfortunate home influences or bad gang influences may be missing for days, and even weeks. You have probably seen in the newspapers, on more than one occasion, accounts of some “lost” child who has heard and heeded the inner call of the distance. There are frequently cases of boys “jumping” freights, and actually visiting distant cities and remote parts of the country before they are apprehended and brought back to anxious parents.

But even in the case of those less impulsive children who neither run away nor “play hooky,” but remain quietly and happily in their homes or schools, it is nevertheless true that the *Wanderlust* is every whit as strong. It seeks its expression, however, not in physical migrations and pilgrimages, but rather in mental pilgrimages of the imagination. I once knew of a boy who lived in a quiet country valley which was quite hemmed in by a very high range of hills. Often in his dreamy moments, when he had tired of his play, he would muse upon the sort of people who lived beyond the hills. In his fancy the boys and girls and grown-ups who lived on the other side must be quite different in their activities from the way of living with which he was familiar, and he dreamed of one day traveling beyond the hills and living among the enchanting people of his imagination. So it is with children. Books and tales of different places are always interesting to them; pictures of the children and people and animals of other lands enthrall them; stories of travel and adventure hold them spell-bound; and if their environment fails to satisfy them in providing such stories and pictures and tales their fancy comes to their aid and paints the great outer world in roseate hues.

Perhaps you can still recall your first long trip on the train. If you were six, or seven, or eight at the time, how wonderful the world appeared to you! And how deliciously

satisfying to your fancy were the swift-speeding cities and towns as you were borne hastily and enchantedly through them! Does not memory of that red-letter day still unfold to you like a happy dream?

Are adults subject to it? In mature life, too, it is not difficult to find evidences of the persistence of the migratory instinct. You may have heard of or actually known of families who were content in one street but a short time, and who were continually moving from place to place, and perhaps even from one town to another. In a similar way everybody likes to travel, either in the home country or in the countries beyond the ocean. It is a pleasing way of satisfying the migratory promptings within us, and we Americans are probably the greatest travelers in the world. It seems to be a law of life that those nations who labor intensely must also relax intensely. Yielding to the migratory instinct in this way is a pleasant form of relaxation. Then, too, there are the tramps, or professional wanderers, who have chronically given themselves over to the promptings and the inner strength of the *Wanderlust*, and find contentment only in seeking ever new scenes. In the gypsies we have the strange phenomenon of an entire race or tribe wandering always over the face of the earth, their home wherever their tents chance to be pitched.

Origin of the migratory responses. In primitive life, as we have already seen, those responses which are now instinctive were in some vital way necessary to the preservation of the race. It is easy to understand how essential the migratory habits were to the continued existence of the tribe. In an age when nothing was known of agriculture the food supply could be replenished only by seeking a new source. Hence, as rapidly as the edible materials in one locality were disposed of, it was necessary to move into more plenteous regions where the land flowed anew with milk and honey. The migratory instinct as we know it to-day is the trace left in the nervous system of the nomadic life which was necessary to the early development and perpetuation of the race.

Fundamentally then the *food motive* underlies this inner tendency in human behavior to-day. It may be after we have studied the origins of some of the other great instincts that we shall conclude this same food motive to be at the basis of most human instinctive behavior. Was it so in the case of the tendency to general physical activity about which we studied in the last lesson?

TROPICS FOR SPECIAL STUDY AND REPORT

1. Recall instances of your own "running away from home" when you were very young. What motives prompted you?
2. If there are older children in your home (i.e., children between say ten and fourteen years of age) observe whether any of their favorite stories are classifiable under the heading "travel stories" or "adventure stories."
3. Watch the daily papers for accounts of "lost" children, and the possible motives underlying their "disappearance."
4. Do you know of any families who are very strongly possessed of the migratory instinct?
5. What do you know concerning the Bedouin tribes of the desert?
6. If people are subject to the *Wanderlust*, how do you account for the fact of their being homesick after they have left familiar scenes behind?

THE LESSON APPLIED

1. What would be some wise provisions on the part of teachers which might tend to turn aside the call of the *Wanderlust*?
2. Have such influences as school moving pictures, school libraries, etc., any restraining effect upon the natural thirst in boys and girls after adventure and excursion amid new scenes?

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LESSON 8

INSTINCTIVE BEHAVIOR OF CHILDREN (*continued*)

3. Food-Getting and Hunting Responses

Origin in primitive life. We suggested in our last lesson that the ultimate origin of the greater part of human behavior might be found to be connected with the response of food-getting. In primitive life, as we said, it was very necessary for man to lead a nomadic life in order to be always where the food supply was dependable. Not only must a sure and unfailing source of food be constantly in prospect, but once having arrived in a region of plenty it was necessary for man to experiment more or less in order to determine what plants or animals were good to eat. It is not unlikely that in the early history of the struggle for survival many human beings perished from the consumption of poisonous food. If so, natural selection permitted only those individuals who chanced not to eat the dangerous foods to survive, together with those who chanced to eat sparingly of them, suffered accordingly, but did not succumb as the result of the experience. It was always in some such blind, accidental way as this that the race in its infancy learned slowly to protect itself against the dangers that lurked on every hand. The origin of the food-getting instinct of children, which we are about to study, is to be found in the necessity which compelled primitive man to seek out and try all manner of possible foods.

Evidence in animals. If you are aware at all of the food preferences of animals, you are familiar with their remarkable keenness in analyzing available food particles. The horse, for example, nibbling the green grass, learns very quickly to avoid taking into his mouth the bitter dandelion or the tasteless herb, or, if he does chance to bite them off, he is

very adroit in spewing them out before they have had opportunity to become mingled with the sweeter grass in his mouth. In a similar way a chick will at first peck at particles of grit as well as of food, but very shortly will respond by refraining from pecking at anything which is of doubtful value as food. Now in both these cases the original tendency was to introduce almost everything available into the mouth, regardless of whether it could be assimilated by the system or not. The derived responses — i.e., the responses modified by experience — do not interest us at this point, for we are inquiring into the nature of the original food responses.

Survival in the human infant. In the human babe, well fed and surrounded with every physical comfort, this same food-getting response, though no longer necessary for survival, still persists. Sight of any small object, such as a toy, is the stimulus which prompts the hands to grasp it, manipulate it, and, very likely, introduce it into the mouth. Many students of childhood have observed that during the teething period infants are particularly eager to get hard objects into their mouths in order to assist in the eruption of the teeth. It is doubtful, however, whether this is the primary motive in the act of introduction. Thorndike suggests that the instinctive tendency to put things into the mouth is a response blended with the manipulative instinct.

But we are not so intimately concerned here with theories and explanations of origin. It is behavior itself which interests us. There seems to be no limit to the number or variety of objects which very young children try to introduce into their mouths. The response is apparent from the very first in the movements of the child's lips and hands to grasp the source of food. From this original appearance the response soon broadens out to include masticatory attempts upon a considerable number of objects, and for the first two years or so of the infant's life the mother has to concern herself very carefully with seeing to it that there is nothing

near the baby which may become for it a source of danger. Clothing, hands, feet, rattles, dolls, paper, corners of books, bits of wood, string, yarn, coins, thimbles, and a score of other things are grasped and carried to the mouth by the omnivorous infant. Sometimes, too, sharp or pointed objects may find their way into the eager mouth, and you have perhaps known or heard of babes who had actually swallowed a pin or a needle, with disastrous consequences. As a rule the habit of sucking the finger, observable occasionally in older children and sometimes in adults, originates in the persistence of the infant in introducing its fingers into its mouth. In order to satisfy this craving on the part of the inquisitive infant, one occasionally still finds mothers and nurses who provide so-called "teething-rings" for the soothing and satisfying of their babes! Why is the practice a pernicious one?

In adults. In older children and adults, besides the habit of putting the fingers in the mouth, one can observe other outgrowths of the infant response. The habit of putting the pencil into the mouth originates, for example, probably quite as much from the instinctive tendency as from the desire to moisten the lead in order to make the writing stand out more sharply. Smoking a cigarette or a pipe may also be to a certain extent the expression of this same primitive response. Gum-chewing and the craving for candy, so prominent in young people, have doubtless a similar basis. There is updeniably satisfaction up to a certain point in having agreeable substances in the mouth — quite apart, of course, from any need which the body may have for additional nutriment. Beyond that point, however, the system may rebel violently against a continued toleration of the substance, at least for the time being.

Hunting. Joseph Lee, in his inspiring volume entitled *Play in Education*, dubs childhood "the Big Injun Age." Big Injun Age it is indeed, and perhaps nothing more truly justifies the appellation than the hunting response. Every boy, as you may have observed, passes through a distinct

bow-and-arrow age. It is a time when no available sources of strong bows and straight arrows are left unexplored. One of the most delicious of experiences which boys can possibly have on a Saturday or holiday afternoon, is the trip to the woods after small animals or "Indians." You have seen this same hunting response manifested in the great fascination which firearms possess for young people. If you were to question a goodly number of boys, eight or nine or ten years of age, as to what kinds of toys they prefer, probably you would find the bicycle and the air-gun occupying prominent places in their minds. It is not necessary actually to "hunt" in order to give expression to the "hunting" instinct. It is enough to build camps, or "shake-downs," or "lean-tos" in the woods, to haunt the groves, to play hide and seek, to shoot at targets with sling-shots or air-guns, or with stones, to delight in games of chase and pursuit, to lie in wait for one's chum behind a sheltering wall or fence and then to spring suddenly out upon him as he passes all unsuspectingly, to search after spruce gum among the spruce trees, to seek out the ripest berries or the shadiest grove — all these are variations of the hunting response in children. Is the response more common in boys than in girls? If so, can you tell why? Enumerate other examples of the hunting instinct.

In adult life the response still exists just about as strongly as it did in childhood. Witness, for example, the man who lives but for the annual return of the hunting season. Pause to consider how many deer and partridge and rabbits fall at the crack of the huntsman's gun every fall and every winter. It is the call within of the primitive, and the response to it is full-hearted and complete — not that there is need for game so much as that there is an inner deliciousness in tracking the animal into his lair.

In the lives of the animals themselves the hunting instinct plays naturally a very prominent part. In the case of the wild animals especially, food may be obtained by preying upon other and weaker or less fleet animals. It is nature's

eternal law of struggle for survival. What have you read concerning the method of hunting employed by certain wild animals? Even in the case of the domesticated dog and cat, both of which are well fed and do not need to hunt, it is the common observation of every one that the former prowls about walls and fields and marshes in search of woodchucks, while the latter is the greatest natural enemy with which the rodents have to contend for survival. Thus, even in our more common domesticated animals of the lower orders, the call of the primitive is still insistent.

Origin of the response. The origin of the hunting response in primitive human life is quite apparently to be found in the continual searching after food which motivated primitive behavior almost *in toto*. As soon as the bow and arrow had been invented, man had in his possession a powerful weapon. Hitherto he had been obliged to depend upon either the strength of his muscles in a personal encounter with animals, or else upon the doubtful method of hurling rocks or stones among them or setting snares for them. But armed with the bow and arrow he could lie in wait and hope successfully to match his skill with the strength and agility of animals at some distance. The keen interest which boys manifest in hitting and throwing and shooting, as well as in the attendant camping and chasing and hiding, is rooted, like all other innate responses, in primitive necessity.

TOPICS FOR SPECIAL STUDY AND REPORT

1. Observe an infant for ten minutes, paying special attention to its tendency to introduce small objects into its mouth.
2. Plan to observe carefully the people with whom you are associated throughout an entire day for the purpose of discovering whether it is common for adults to put pencils, penholders, and other small objects into their mouths while thinking or reading, or to keep their hands or fingers much of the time in the vicinity of their mouths.
3. Report on your observations of the hunting response in boys of your own neighborhood. Do the girls show tendencies toward the same sort of activity? If not, can you explain why?

4. Can you cite any evidence to show that boys are interested in bows and arrows, air-guns, and other toy weapons?

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LESSON 9

INSTINCTIVE BEHAVIOR OF CHILDREN (*continued*)

4. Ownership and Collecting

What to look for in the observation period:

1. Any evidence that the teacher is taking advantage of the collecting or ownership responses of her children. For example: Is there a school museum? Is stamp collecting or picture-card collecting encouraged in connection with the work in geography, history, etc.?
2. Any evidences of pride on the part of a child over something that is *his*, or *his* father's, or *his* brother's.
3. Whether the children are buying thrift stamps, putting money in the "school bank," etc., and if so, note the pride which they are taking in thus adding to their possessions of value.

Children's collections. If you were to examine the contents of a ten-year-old boy's pockets — and did you ever stop to think why it is that boys *have* so many pockets? — you would doubtless find that they contained a surprisingly heterogeneous collection of small articles, ranging from a fish-line to a bit of string, and from a smooth stone to a pocket mirror, or a collection of nails and screws to a ring of nondescript keys. The actual number of objects would doubtless be as surprising to you as their unrelatedness. In this lesson we are to inquire into that fascinating aspect of the child's original nature which seeks satisfaction in collecting and assembling all manner of transportable articles in the environment.

It may be that you yourself recall vividly the many pleasant hours which you spent in amassing great quantities of attractive articles, and in playing with them or talking them over with boon companions of childhood. If you have such memories — and who of us has not? — you will ap-

precipitate better the great, impelling force of the collecting or ownership response in young children. The attractiveness and charm of collecting lie apparently not in the intrinsic value of the objects accumulated, but rather seem to reside in the sheer pleasurable-ness of owning and in the sheer pleasurable-ness of accumulating. If you will recall your own collections made in early youth you will probably agree that there was little real value in the objects themselves. You will recall also that the delight in collecting and the joy in exhibiting were extremely satisfying.

Stamps and coins. Perhaps one of the outstanding facts about children's collections is to be found in the wide range of objects which they embrace. Common among the articles collected universally by children are stamps. It would perhaps be difficult to determine in how far the collecting of stamps satisfies the collecting and ownership instinct merely, and in how far the migratory instinct is appealed to by the possession of stamps of other countries with strange faces or buildings or scenes engraved upon them, and bearing a language unknown and for that reason all the more interesting. Certain it is that both responses find satisfaction in the collecting of foreign stamps. But even the everyday home stamps offer an attractive field of effort, and you doubtless know of many a boy or girl who is anxious to remove the stamp from the incoming letter before even the postman has dropped it in one's eager hands. The writer knows two boys who have their regular weekly "soaking-off" day every Saturday morning, when all the accumulated letter corners of the past week are thrown into a pan of warm water and stirred about until the stamps can be satisfactorily slipped off the under paper. Following this process comes the "drying" stage, wherein the dripping, sticky stamps are spread carefully out on a board, face downward, to dry. After this process is completed they are deposited in a supply box until such time as they have accumulated into a sizable mass, when they are sorted and tied up in neat bundles containing one hundred each! What

a deal of work, and what a calamity of sticky hands and soiled blouses and stained fingers! But it matters not: possessions are increasing hourly.

Another article enjoying much favor on the part of youthful collectors of the more enterprising sort is the old-fashioned coin. Happy the boy who chances, in some waste-filled or forgotten attic or chimney-closet, upon two or three coins in current use when his father or his grandfather was young. Forthwith they become the nucleus about which other and yet other coins of ancient date begin to accumulate, and aunts and uncles and neighbors are interviewed eagerly with the invitation to aid in the amassing of the legal tender of yesterday. Occasionally, too, although not so frequently as in the collecting of stamps, a boy chances in the full heat of his collecting ardor upon an old Mexican coin, or perhaps a coin from some land beyond the sea. At once his conspicuous property makes for him an assured place in the hearts of his comrades, and he comes to enjoy unwonted prestige among them by virtue of his possessions.

Girls' collections. Among girls as an article frequently and commonly collected, paper dolls perhaps deserve first rank. Often the latest family magazine is little more than delivered when the ubiquitous scissors snip from it the fashion plates, to the end that the supply of dolls may be increased. Catalogues of mail-order houses share a like fate, as do also fashion sheets and posters. One girl numbered among her dearest treasures several hundred of these dolls, representing in their designs every age and condition of life, both at home and abroad. She kept them tucked carefully between the pages of large books, and when the books bulged out so far that the covers would no longer remain closed, she collected all manner of large envelopes wherein she deposited the weekly toll from her several sources of supply. Many and many the happy hours that the child passed either by herself or in the appreciative but envious companionship of her playmates in playing with her treasures. What with changing and rechanging the dolls'

dresses at least a dozen times a day, matching becoming hats to them, and crooning happily all the while, the days were all too short for her.

Of course real dolls are preferable to paper dolls, and often you will find girls seven to ten years of age who possess a score or more dolls in various stages of preservation and decay, yet equally loved withal. One girl whom the writer knows well possessed at the tender age of eight years no less than thirty-two dolls, each one of which had a full name which she could properly call as invariably as she could the names of her playmates in the flesh. The fundamental instinct lying beneath this love for dolls is another which we shall study in due time — the maternal response — but in this case, as so often, the joy of collecting and possessing was so mingled with it that one could hardly say which was the stronger.

Development of the response. The first evidence of the ownership instinct comes with the cry (or the *act*) "Mine, mine!" in the very young child. Not infrequently the possession idea is so strong and so selfish that infants refuse to permit other children to touch or handle their toys, and take selfish satisfaction in enjoying them alone. This is especially likely to be the case in one-child families, where there is no common ownership of toys such as there is in families where there are several children. In the latter, incipient generosity may be noted in the comparative indifference on the part of all as to who owns the toys. Still, even in such cases, the instinct expresses itself in other ways, and rarely does one come upon a child who fails to pass through a distinct and long-continued developmental period in which one of the strong forces exerted from within is the passion to collect and to own. It may be nothing more than shells at the seashore, or tiny, colored stones, or horse chestnuts, or marbles — but there is sure to be something. Even the pride which a five-year-old takes in a new dress, or a pair of new shoes, or a ribbon which is *hers* is in part at least traceable to the passion to own. And so the instinct grows and de-

velops with the dawning of childhood and childish interests. Led on in part by another instinctive force, curiosity, the collecting response comes often to occupy in a child's life, for months at a time, a most prominent place.

Nature collections. Occasionally, too, interest in nature exerts a profound influence over the collecting instinct. This interest impels the juvenile collector to hie him away to the woods or the fields or the parks or even into the back dooryard — and how much finer opportunity the country boy or girl has than the city child! — to gather and press daisies and violets and other wild-flowers; to seek out leaves of the finest texture, and all shades of green or glow; to chase the fleet-winged butterflies or to attract the larger, light-loving moths at night-time. One child dearly loved by the author had chased and mounted more than nine hundred butterflies and moths before she was fifteen years of age. And then there are the animals and insects in which boys particularly often manifest much interest. You doubtless know of many boys of your acquaintanceship who take great pleasure in their rabbits or white rats or tadpoles, or even grasshoppers and lightning bugs. It need hardly be said that collections of this sort possess a high educational value. If young people are made into nature lovers when they are young they will be likely to find in natural things an abiding satisfaction and source of enjoyment when they grow older. And yet, how few *real* nature lovers there are among children in these days of moving pictures and indoor amusements!

Quite apart from the educational significance of the collecting instinct, however, is the impulse to get, to obtain, to find out, to compare and contrast, to test and experiment, to search diligently and labor indefatigably. If in some magic way you teachers could seize upon all these internal compulsions of young people in your actual teaching, what transformations you would work in them! If you could command the hours of patient search and attention which they give freely and eagerly in their collecting, you might well be satisfied. After all, nature is the better teacher.

Young people are very active and very curious, — as we have seen; what greater driving force could one wish for?

Waning of the collecting passion. It is an interesting sequel to all this amassing of childhood's treasures that interest in them largely ceases with the coming of youth. Then the limited interests of childhood are swallowed up in the limitless horizon which opens to reveal the whole world to the eager gaze of the adolescent. There is always a tender spot in the heart for the pleasures and interests of childhood, but the wider interests of maturing perceptions and ideas come to take their places, and the individual *grows*. Only the sub-normal continues to play with his toys and trinkets of childhood: his normal, natural, evolving playmate puts away childish things and becomes, first a youth, and afterward a man.

Where did the instinct originate in primitive life? It is always an interesting inquiry to search after the origin of a response of the present individual in the past experience of the race. In the case of the instinct which we have been discussing in this lesson the genesis is as obvious as is that of the migratory response, or as that of the activity response, which we have already discussed. Possession meant, in primitive life, protection against famine as well as security from other tribes or from animals. It meant comfort and the means of safety. It was doubtless one of the first laws of survival that sufficient food must be stored up by an individual to last his family through chance seasons of famine and unwonted rigor. In a similar way the individual who was possessed of the truest arrow or of the longest spear — and the greatest number of both — was, other things being equal, the superior of any enemy who chanced across his pathway. So, too, collecting of legal tender used in primitive exchange was an important safeguard against suffering and privation. Fuel, skins for clothing, barks, woods, juices and pitches and gums, were indispensable in the life of early man. So in modern children, who are after all closest to the heart of the race, the same force impels

them to search out all manner of interesting objects to possess them and to enjoy them. The necessity no longer exists in the same simple way in which it existed in primitive living, but it rather persists as nature's gentle way of opening the eyes and the ears and the other sensitivities of nature's child to the great, mysterious surrounding world in which it finds itself.

TOPICS FOR SPECIAL STUDY AND REPORT

1. Recall your own early responses to the collecting instinct. Did the chief joy lie in the process of collecting, or in the satisfaction of possessing? What is your adult attitude toward these early collectings?
2. Make a list of all the objects which you have ever known children to collect.
3. Do one's early childish interests, as evident in the things collected, exert any influence over later vocations or avocations? Can you illustrate?

THE LESSON APPLIED

1. Can there be any educational significance in a collection of stamps, coins, flowers, stones, woods, etc., or in the making of scrapbooks of pictures of interesting places, people, events, etc., in connection with any of the subjects of study? If so, how may the wise direction of the teacher be of value in encouraging and stimulating the young collectors?

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LESSON 10

INSTINCTIVE BEHAVIOR OF CHILDREN (*continued*)

5. The Gregarious Instinct: The Gang

What to look for in the observation period:

1. Whether there appear to be one or two or perhaps three boys in the grade who are "leaders" of the rest. If possible observe the organization of the children during the play period and note whether the leaders at play are identical with those who are leaders within doors.
2. Any evidence that the teacher endeavors to take advantage of these natural groupings in the management of the school, in the conducting of the lessons, etc.
3. Whether there is any more evidence of the gang instinct among the boys than among the girls.

Man's social predisposition. It seems to be human nature to shun solitude and to seek company. You are familiar with the *gregarious* tendency as experienced in your own dislike to be frequently alone, and your wish to have numerous friends whom you feel that you understand and who understand and sympathize with your own ambitions and ideals and aspirations. Many a time, doubtless, you have sought release from a lonely hour at home by standing at the window and at least seeing other people, or by actually fleeing from the empty house to the home of a friend or neighbor, there to remain until the absent father, or mother, or children come home again. And then how different the empty house seemed in the cheery glow of lamps and fire-place and the satisfying hum of voices. You have experienced the same loneliness perhaps in riding in an empty coach, or studying in a deserted library, or perhaps even in going from the city into the country. There is a joy in companionship or in crowds which one rarely experiences by himself. It is not always necessary to know the people about one, as for

instance on a crowded street or in a department store or at the church or theater. There is joy in numbers, and the very knowledge that other hearts are beating about one is in itself a source of contentment.

This strange aspect of human behavior is called *gregariousness*, or the tendency to seek the group. In adult life you observe evidences of it in the clubs and societies and other social groups which are often organized quite as much to satisfy the cravings for congenial companionship as to promote educational, civic, or other common ends. Neighborhood clubs, men's clubs, ladies' circles, secret societies, — all fall within the classification. In the foreign quarters of large cities you will find "little Italys" and "ghettos" where nationalism governs the grouping of adults, thus manifesting the coöperation of blood with gregariousness in bringing human beings into a common habitation.

Animal gregariousness. In animals, too, there are very striking illustrations of the strength of the gregarious instinct. Birds, for example, are usually seen together, and when they migrate from place to place they are often to be observed flying in great numbers in the direction of the locality sought. Domesticated animals, notably cattle and sheep, behave in a similar manner. Let the herd of cows be separated and at once there is evidenced the keenest distress, which may continue for several days before the record of past associations seems to be obliterated. The herd grazes together, comes up to the milking shed together at night, and seeks the common shade of the same grove for relief from the hot sun at midday. The behavior of sheep is similar, as is also that of fowl. Dogs and cats are actuated doubtless by the same tendency to run together, although the attachment which they come to have for a single home, where only one of their kind is permitted, has operated in the past to neutralize to some degree the early response. Can you furnish other illustrations of the gregarious behavior of animals?

The constitution of boys' gangs. It is perhaps in children,

and more especially in boys, that the persistence of the tendency is most obvious. The statement has been made on good authority that three out of every four boys belong to a gang at some time or other in their lives. Whether this percentage is constant or not, it is a matter of common observation that boys almost invariably move in groups. Unfortunately the nomenclature of the past has applied the term *gang* to any more or less nondescript group of juvenile or adult marauders whose activities were such as to cause society to frown upon them. In this discussion, however, it is essential that the term be understood in its proper psychological sense, that is, a group banded together for a common purpose, good or bad. As well call the migratory, or the hunting, or the collecting responses bad in themselves as to call the gang tendency bad. The gang instinct, like all instinctive forces, is in itself a beneficial and highly desirable tendency. It results in unfortunate consequences only when it misuses the normal impulses and turns them into undesirable channels of expression.

The constitution of the gang is always an interesting subject to contemplate. In general, as Puffer has shown, the gang age is from ten to sixteen years, with thirteen and fourteen the high-water mark. It is usually strictly a local affair, including in its personnel only boys living in the same street, or in the same square, or upon intersecting or neighboring streets. The youthful members are not particularly exercised as to the community of nationality represented, the Jew being as welcome to their fold as the Gentile, and the Irishman as the Finn. Very suggestive names are given to the organizations, and there is always a leader, chosen usually not because of any temperamental fitness for the high authority which he is to wield, but rather because he can run the fastest, tell the best story, or otherwise excel the attainments of his fellows. Without exception the leader is at once judge and court of final appeal in all matters of disputation arising within his organization, and as a rule the litigants religiously abide by his decisions and

findings. Sheldon finds the activities of the gang, from his study of 851 gangsters, to include athletics (60 per cent), migrations, i.e., building, hunting, fighting, preying (17 per cent), and social, secret or literary activities (only 13½ per cent). In his detailed survey of 66 gangs, Puffer found basketball and football occupying highest place in the list of gang activities; tribal industries, such as hunting, fishing, boating, building huts, playing Indian, etc., on the one hand, and stealing and injuring property on the other, enjoying second place; with such activities as fighting, swimming, migrations, running games, smoking, playing cards, skating or sliding, and drinking making up the full list.

It is apparent from Puffer's observations that the gang instinct is fraught with great possibilities for good or for bad, depending in large measure upon the leader. You have doubtless observed a goodly number of illustrations of the operation of the gang instinct in boys. You have seen them in groups on a Sunday afternoon walking out into the country; you have seen them congregated in more or less constant groups on the playgrounds; you have seen them walking to and from school in unvarying formation. On the streets of a city on Sundays many knots of them are to be found conversing in somewhat boisterous tone and idly observing the passers-by. It is probable that in your own neighborhood there exist several gangs of boon companions who are always seen together, and who stand together through thick and thin in most matters of common participation. Members of the same gang are extremely faithful to one another, but are not so ready by any means to defend one who is outside of their own organization, and it is extremely likely that, if you are at all observant and heedful of the escapades of your own smaller brother, you have had this fact forcibly brought home to you on sundry occasions.

The tendency in girls. But what shall be said of girls of the same age? Are they quite insensitive to the gang impulse? By no means, although from the very nature of their more restricted life there is less evidence of the presence

in them of any very strong tendency toward gregariousness. There is no doubt, however, that girls go in groups or "sets" just as commonly, if not as boisterously, as do boys. Inasmuch, however, as boys are more ubiquitous, more inevitably seen, and less home-staying, we are apt to make the error of assuming that the more quiet and retiring girl is quite a different sort of creature.

Chumming. In either case, both boys and girls, in addition to their groups or "sets," usually have special chums who are most congenial and best loved. It is doubtful if there was ever a *real* boy who grew up without possessing a chum in another boy of the same age and of more or less similar tastes. The same thing is true of the girl. The "set" is indispensable and its associations are eminently satisfying, but there is a special sweetness in having one single friend of friends who understands one best, and whose ears and heart — and arms — are always open. Recollections of such comforting and trusting associations enrich and ennoble the whole subsequent life of both individuals, and the chums of childhood are likely to remain the fastest friends of youth and maturity.

Gregariousness in primitive society. Beset as they were on every hand with dangers that they understood but vaguely, it was necessary for primitive men to band themselves together into tribes or clans or villages for purposes of protection. In union only was there strength. In most primitive society the tribe represented the unit of defense and offense, every tribe being a law unto itself. The tribe or clan lived together, fought together, and often fell together before the assault of a superior foe, for natural selection ruled early in human history that that tribe should survive which kept itself most intact and numerically strongest. In subsequent evolutions of communal living other interests than the totem-pole or the worship of a common ancestor operated to maintain the union of men in groups and to discourage living in solitude. This early social necessity is reflected in your modern gregarious instinct or gang response

which, while no longer a prerequisite to survival, still serves to draw children together in groups or sets. Often there are elaborate ceremonies of initiation into the group, as for instance in the secret societies of the high school, and there is a remarkably faithful *esprit de corps* observable in the membership of all such organizations. In the case of children of thirteen or fourteen years, however, when the gregarious response in its most primitive form is at its height, little time is wasted on initiations: the activities awaiting the attentive participation of all are too alluring.

We have said that the ganging age begins with about the tenth year. Previous to that time the child is more of an *individual* in his tastes and preferences. He is quite content to play by himself when no ready comradeship offers, and may pass hours at a time in happy, inquisitive solitude. He is still in that stage of evolution wherein his primitive prototype had not yet learned the necessity for or wisdom of community of effort and the pooling of strength in the common struggle for survival. In most primitive life, doubtless, many an individual defender of his own family and hearthstone perished before it was learned that individuals must coöperate in matters of the common weal. The early, or individualistic, age of childhood represents therefore a distinctly lower condition of evolution than does the later gregarious age which dawns with incipient puberty and continues in some form or other throughout life.

TOPICS FOR SPECIAL STUDY AND REPORT

1. Did you belong to a gang or "set" in childhood? What were the activities that you most enjoyed? What is your present attitude toward the individuals belonging formerly to the group?
2. What have you observed of boys' gangs and their activities in your own neighborhood? Of girls' sets?
3. Had you a chum whom you particularly loved? Are you still firm friends?
4. Observe and report upon the activities of some group of boys on a Saturday or other holiday.
5. Observe the preferences of a child of five or six as to play in solitude or with other children.

THE LESSON APPLIED

1. If school children in the upper grades are naturally in the dawn of the social age, in what ways and to what extent should the life and activities of the school be organized on the basis of a miniature society? In how far are our schools already meeting this condition?
2. Is there any argument to be derived from the nature of the gang instinct in children against individual instruction and in favor of group instruction?
3. Does the presence of the gang instinct offer any obstacle to the teacher, or is it rather to be considered a valuable ally?
4. What difference in teaching methods would you expect to find between the instruction of the kindergarten and that of an eighth grade class? Explain.

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LESSON 11

INSTINCTIVE BEHAVIOR OF CHILDREN (*continued*)

6. The Play Response

What to look for in the observation period:

1. Whether the teacher recognizes the presence of the all-pervading play instinct and occasionally includes it to advantage in the motives to which she appeals. Are there any differences in degree to which the play motive may be appealed between the lower and the upper grades?

Play in animals. If you have ever watched the antics of a small, perfectly healthy kitten, you are aware of the strength and persistence of the play response. Hardly are its eyes open and its legs strong enough to support it when it begins to be on the watch continually for a protruding bit of string, or a ball of yarn or a spool upon the floor. For long periods at a time it will arch its back, creep stealthily toward the spool or ball and then spring lightly upon it as though it were a mouse about to scamper away. Then, after a scuffle during which it shoves it about with its curled paw and then springs gleefully after it, it walks demurely off, only to pause, look backward at the inoffensive object, and then sidestep noiselessly up to it again to repeat the same procedure. The dog, too, is no less a victim of the play impulse. He seizes the stick in his mouth and darts off with it, growling playfully the while, until he succeeds in getting his master's attention and in teasing him to throw the stick far from him and then run and hide while he goes to fetch it. The dog, unlike the cat, is a social being, and takes great delight in romping about with other dogs which are actuated by the same impulse to play. You have probably smiled many a time at the playful wrestling of two dogs in the yard, and have perhaps wondered whether they were not actually in

earnest about it, so loud and angry did their growling sound to you, and so long and sharp appeared their teeth as if buried in each other's necks. But they were not fighting; they were merely satisfying that tendency universal among animate organisms of the higher order to *play*. This same impelling force is to be seen in the young colt which gambols and frolics about the pasture or lot, as well as in the mother which, freed unexpectedly from her stall, races madly across lots until she is breathless from the exercise. In the frolic of lambs and sheep, in the darting hither and yon of chicks after the fleeting insect or the disappearing worm, in the aimless flying about of birds in the tree-tops and above the meadows, and in the habits of many of the wild animals at the zoo, the promptings of this same impulse to play are to be observed. It is an inner force universal among animals, appearing more marked in the case of those which have been tamed or domesticated and so require a considerable amount of activity over and above that needed in securing food to keep themselves in trim. The wilder animals of the forest and jungle have need to expend the greater part of their energies in obtaining food.

Play in adult human beings. The healthy, normal adult human being plays, also. The mere attainment of maturity is no evidence that the play impulse has been forever satisfied; it implies rather that the more thoughtful games or the sports requiring the keener judgment and skill can now be more thoroughly and completely enjoyed. Take, by way of example, our great national game of baseball. Rare indeed is the man who cannot make the necessary arrangements of his business to permit of his leaving it for two or three hours occasionally in order to be a spectator of a "game." Very often, too, groups of adult laborers organize teams among themselves which compete for the local championship, thereby giving themselves not alone the satisfaction of watching a game but also affording to many of their members opportunities actually to participate in it. This direct participation in some contest of speed, or strength, or

cleverness is frequently more enjoyed by adults even than the mere passive observation of others competing. Tennis and golf offer perhaps the two commonest sources of this participation, outside of baseball, and tennis courts and golf links are coming to be modern necessities in any community. But there are many adults whose physical expenditures in their vocations are so great, or whose distaste for violent exertion is so pronounced, that they seek relaxation in the more quiet and subdued games, such as checkers or chess or whist. It is probable that card-parties owe their popularity quite as much to the play element in them as to the opportunities for conviviality which are offered. But it is not essential that there be actual games played in order for adults to play. The conversations and discussions with boon companions; the relaxation of the after-dinner hour; the evening at the theater or the club; the visits at the homes of friends; the vacation trip — all these activities are at heart play. The recent phenomenal increase of automobilists points also to the compulsion of the play instinct quite as much as to that of the migratory response. So, too, the marked tendency to decrease the length of the working day in most of the trades is due probably more to the cravings within the heart of the laborer for more leisure for enjoyment than to any other factor. The modern regimen of a well-ordered day calls for eight hours of work, eight hours of sleep, and eight hours of play — which is very likely an almost ideal division of the twenty-four, provided, of course, the nature of the play be such as to increase the eagerness for and joy in work rather than to confirm the laborer in his idleness.

Play in young children. But it is in the children that the great play instinct seeks and finds its grandest fruition. Childhood is the golden age of play. It is the period when play and sleep divide the twenty-four hours tolerably evenly among themselves, leaving work a constantly increasing amount, it is true, but after all only slight at its maximum. In the case of the younger child — i.e., the infant from the time of its birth to perhaps the sixth or

seventh year — as we have seen, individualism is more pronounced than socialism; that is, the inner satisfaction derived from intercourse with one's self is likely to be nearly as strong as the delight which comes from intercourse with the group. By this it is not meant that all children *prefer* to play alone during the early period, but that they find contentment in solitude quite as readily as when surrounded with other playfellows. Let us take a bird's-eye view of some of the well loved and universal types of play dear to the heart of the young child as the sunlight.

First, of course, will be the mud-pies! Can you recall the multitude of dishes and cans and platters which littered the back yard when you were in this delicious age, and which had a way of being found even on the steps into the kitchen or perhaps even in the kitchen itself? And can you not see still the muddy hands and shoes and dresses, and the serious faces of your comrades as they made and baked their pies with yours? And then there were the dolls' tea-parties, and the hours and hours of solicitude for the welfare of the dolls which must be rocked and lisped and sung to sleep just as invariably as the sleepy time approached, only to be rudely awakened in the morning by eager hands and made ready for the innumerable activities of the new day. Playing house with other children was likewise probably one of your earliest forms of infantile joy; while memory of the many, many hours passed in skipping rope; or in spinning tops; or in marshaling tin soldiers in battle array; or in nursing a sick doll back to health (probably soon after you recovered from your attack of measles or mumps or scarlet fever) who, strange to say, was suddenly stricken low with the same malady which attacked you; or in racing up and down the yard and sidewalk dragging a swaying, squeaking cart behind you; or trundling a wheelbarrow back and forth across the lawn; or in dressing up in mother's or father's clothes and appearing upon the street of men for all the world like real grown-ups; or in listening for hours in awesome attention to wonderful stories of fairies and goblins or giants; or

in turning over the fascinating pictures in your nursery rhyme-book; or in driving fast express trains in and out between the legs of the table until the inevitable wreck took place on a particularly dangerous curve; or in building up towers and temples from your blocks until they resembled for an instant Pisa's Leaning Miracle, and then were as instantly plunged into destruction; — memories of all these interesting childish activities probably surge back into your mind faster than they are here enumerated, together with scores of other favorite sports and games and activities of early childhood. What a pity it is for you teachers who are always to work and play among children that memories of your own delicious childish play are apt to become so confused and indistinct with the onset of maturity.

Rhythm and ring games are especially liked by younger children, and the kindergarten makes perhaps its strongest appeal by reason of the emphasis which it places upon them. Counting-out games, because of the rhythmical swing, are common sources of delight. And the sand-pile! What long, earnest hours are spent by the younger child in the construction of wondrous caverns and high mountains in the gentle medium of a sand-pile! Tunnels and highways and lofty peaks arise from its depths indiscriminately at the magic command of the youthful engineer who bends all natural obstacles to his will.

Imaginary playmates. Sometimes it happens that a child who has no brothers or sisters near his own age tires of playing always alone. In such event he merely turns his creative genius away from the sand-pile or the mud-pie or the Mother-Goose, and proceeds to *create* a playmate, if you please! Possibly you yourself were one of those socially-minded children who were discontent with solitary play, and conjured up within you an imaginary playmate. If so, you can better understand the need which children often feel for congenial companionship. Once the imaginary playmate is created, she becomes the constant companion of her creator, playing with her, romping with her, working

with her, sleeping with her, — yes, even being sympathetically sick with her like a true friend. Listen some day when you chance upon such a child and you will hear her talking with her “imaginary” just as happily as though the latter were actually there in the flesh. Perhaps she will scold her, or it may be that she will belittle her efforts at mud-pie making, or at doll-dressing, or at housekeeping, or tea-party entertaining. But for the most part the two will agree perfectly, and will be found oftenest crooning in contentment over some commonly agreeable task.

The earnestness of play. One other thing should be said about the play of very young children before we turn to study the older child at his play. Children take their play very earnestly to heart, and vouchsafe to it their whole attention and their whole energy. Watch a child, for example, who is piling up block upon block in anticipation of a grand climax when no more blocks can be added. You will find that his face is as serious as it is possible for it to be, and as he carefully, hesitatingly adds block to block his whole personality is centralized and focalized upon the process. He is experimenting, testing, trying out with all his mind and with all his strength. But that fact does not make him the less demonstrative when the climax occurs and the blocks fall with a crash. His shouts of glee leave no doubts in your mind that if he can be very serious in his play he can in like manner be very boisterous. What a successful teacher one would be who could succeed in arousing in her children the sustained attention and the passionate earnestness which their blocks call forth!

TOPICS FOR SPECIAL STUDY AND REPORT

1. Report upon five minutes spent in observing the play of some domestic animal, preferably the cat or dog.
2. Recall some of the things which you liked best to play in early childhood. Why do you think such games appealed to you?
3. Observe a single child or a group of children at play. Write out your impressions and conclusions.
4. Had you an imaginary companion? If so, recall some of your experiences in playing “imaginary.”

THE LESSON APPLIED

1. To what extent have our educational values shifted in recent years, permitting the play motive to be made use of legitimately in the schoolroom? (The Greek word *scholē* from which our word *school* is derived, meant *play*, or *leisure*!)
2. It has been objected to the introduction of the play and other instinctive motives which naturally hold the child's attention that they tend to "sugar-coat" education. How is this possible? Can you justify or deny this contention?

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LESSON 12

INSTINCTIVE BEHAVIOR OF CHILDREN (*continued*)

7. The Play Response (*continued*)

What to look for in the observation period:

1. Whether there is any socializing influence observable in the games played by the children during the play period (recess).
2. In what respects, if any, the games played by the girls differ from those played by the boys.
3. Evidences of the boisterous element in play. Of the purposive element.

The play response of later childhood. In our last lesson we took occasion to remark upon the strength of the play instinct in earlier childhood, and to discuss some of the more common ways in which this response expresses itself at that age. In our present lesson we are to continue our inquiry into the nature of the play impulse as it appears in the lives and activities of older children; i.e., in children of school age. After all, you will be dealing in your teaching more with children older than six years than you will with children under that age. The nature of the play response of later childhood should therefore be of even greater importance to you in your actual intercourse with children of school age than that of infancy. Let us then turn our attention to a discussion of play as it moulds and holds the lives of the former.

General characteristics. In general it may be said that the age of childhood is the age of social play, the age of boisterous play, and the age of purposive play. The earlier period of infancy, as we saw, was rather the age of individual, quiet, and aimless playing. When we discussed the gregarious instinct in children we said that the great age of gangs and sets begins with about the tenth year, and continues in increasing proportions throughout the earlier

years of adolescence. In other words, the age of socialism in children is synonymous with the ganging age. Just as soon as the child begins to hover about the group he loses his individualistic tendencies, and becomes for a time an individual who has submerged himself in the group. His play immediately ceases to be the simple, unrelated play of his own dooryard and becomes the related play of the group in which he chances to move. From the very exigencies of the new situation and the new emphasis it follows that the element of boisterousness and braggadocio enters in in an unrestrained enthusiasm and happiness. From the quiet, retiring child who bashfully gazed out upon the street and watched the team play of older children from afar off, the seven-year-old suddenly becomes a running, jumping, wrestling, laughing, shouting athlete who throws his whole energy into his play and tires himself out perhaps long before the day is half over, yet who is never ready to quit of his own accord. At the same time, developing slowly from the aimless, haphazard running and shouting and pushing and wrestling there is evolving within the boy of this age an entirely new human being, whose values are coming more and more to be the values of the group as represented in team work, faithfulness to the organization, fair play, good sportsmanship, sympathy, and appreciation, all of which desirable qualities were quite lacking in the child of five. Nature is evolving a good citizen, a desirable member of the group, a social being in every game of baseball and in every game of tag, and in every contest of strength or cleverness in which her child participates, provided always of course that the non-social instincts and the unworthy motives are wisely discouraged by the good sense of the group as a whole. Let us turn now to consider some of the characteristics of the more common games and sports indulged in by children in this social age.

Play is social. It is probable that the simple game of tag which children seem never to tire of, and to which they inevitably come back when newer games are temporarily

discarded, is about as social and socializing in its nature as any game which children play. Perhaps its very socialism is the reason for children in the midst of the social age always indulging more in it than in other sorts. There is no limit to the possible number playing it — the more the merrier. Skill in it is conditioned not upon clever judgment nor skillful muscles nor artistic temperament; all that is required is a pair of good muscular legs, and given that, any child is eligible. Recall for example the many hours of the day passed in childhood in this delightfully satisfying old game of chase. It mattered not whether there were two children or forty; it mattered little whether there was any "goal"; all that mattered was that every one should be of single mind in the matter. And then what long, happy periods of running and shouting and screaming to the lively tune of scampering feet across the playground or the high-road or wheresoever else you chanced to be. If variety were needed, there was always the less strenuous "prisoner's base" which required just about the same agility without the extended powers of endurance.

If you will take the pains to watch the activities of a group of boys at playtime, or after school on school days, more than likely and sooner or later they will all join in playing baseball or, in the more usual form, "scrub." Here is another socializing game, for in rapid succession every player passes through all the possible offices, including catcher, pitcher, and umpire. It matters little whether there is very much skill manifested or not; a good player elicits praise and a poor player happy toleration, so that all are content. Of course they are keenly interested too in organized baseball, and what school is there nowadays worthy the name which has not its "team" to represent it against other schools? And what a deal of team play is in evidence not among the actual players merely but among the entire enrollment of the school when its "nine" meets other "nines"! Everybody pulls together; there are no slackers and no traitors to the cause. This in itself is a token of the socializing spirit of

the games of later childhood. They all tend to promote in their participants faithfulness to the group, fair play toward others, and good comradeship in all.

Play is boisterous. If you chance to live in a neighborhood where there are a goodly number of boys seven or eight to twelve and thirteen years of age you probably need no defense of this caption. Probably half the joy which children get out of play lies in the satisfaction which their vocal cords experience in free and untrammelled eruption. In fact participation in a game is not a prerequisite to this release of vocal energy, and you have doubtless seen and listened to scores of boys who found shouting and trilling and wailing and screaming and screeching ends in themselves. In this respect boys are not unlike the scores of dogs which you have seen and heard likewise indulging in passionate fits of barking when there is nothing in the world to set them off save their internal over-pressure which seeks its release in this noisy way. Nor is it a prerequisite to this intense vocalization that boys must be in groups. In pairs or alone, it does not appear to make much difference; vocal exercise cannot be held in leash, and a single boy dispatched by his mother across lots on an errand is certain to indulge on his way in a heterogeneous multitude of vocal gymnastics, echoes of which may extend backward to his home or forward to his destination. In a similar way and from a similar cause the woodlands are likely to ring on a holiday afternoon with the shouts of the juvenile bands who rove their depths in quest of chestnuts or acorns or small game. Sliding down a hill on a double-runner in a frosty winter evening, or whirling across the moonlit ice, or coasting on roller-skates down a steep incline, or playing tag in the field, or even trooping down the quiet street to school — all these activities are accompanied invariably by the hoarse shout or the piercing shriek or the boisterous laughter. There is nothing of your tempered voice and your gentle speech in the assemblies of boys. The words of the old poem, "Boys will be boys with their racket and noise," are eternally true,

and doubtless even in those strict days of the Puritans, boys found opportunity in some unfrequented spot to indulge their vocal organs to the utmost. As well try to hold back the plunging waterfall as to repress the invincible "racket and noise" of healthy young children.

An interesting commentary upon this delight in uproarious boisterousness is to be seen in the celebrations of the Fourth of July. In recent years, to the undying gratification of outraged mothers and fathers and uncles and aunts, the larger and noisier cannon-crackers are not purchasable as they were a dozen or more years ago, and consequently the celebrations of the national holiday tend to become more and more decorous and quiet. But the will to make noise is still there in the heart of every boy, and on this holiday of holidays it leaps up into response in long blasts on tin horns or whistles and the beating of drums and the discharging of such explosives as are available, so that while the *quality* of the "racket and noise" is somewhat impaired, its *quantity* does not deteriorate.

Play is purposive. And yet with all its noise and boisterousness play is developmental, and across the warp of shouting and immoderate laughter and shrieking and trilling there runs a woof-thread of seriousness, although it is frequently so thin as to be all but invisible to parents and older brothers and sisters. Nature is very much in earnest about her children, as Joseph Lee has remarked, and none of their play is really aimless. There is little question that the boy will be a better man because he was an exceedingly active and ubiquitous and vocally minded youth. To the clever discerner of childhood the purposive aspects of even the most boisterous play do not pass unobserved. Think, for example, of the training which boys unwittingly get in using the universal jackknife in whittling. You have probably suspected sometimes in observing some enterprising boy bent over his pine shingle that there is a distinct whittling age through which boys appear to pass, and in a general way your observation was correct. Most boys have

a craving for tools wherewith to build great varieties of toys of which they have need, and the wise parent will see to it that this craving is reasonably gratified. The purposiveness in play is apparent, too, in such activities as collecting, exploring, bow and arrow playing, stone throwing, kite flying, velocipede riding, etc. Each one of these activities has a definite contribution to make in the evolution of the complete adult, and nearly every boy passes through distinct periods in which one or more of these activities predominate. Then, too, consider the voice trilling so universally observable among seven-year-olds. They are experimenting upon their own vocal abilities, and many a so-called "cat call" represents weeks and months of purposive training and persistent practice on the part of the boy. In addition to these phases of purposeful activities, should be mentioned the delight which young people take in puzzles, conundrums, sleight of hand, and other kinds of play involving care and skill in performing. Possibly the interest in the last mentioned type of mystery, sleight of hand, is as strong as any interest which a child has in his ninth to eleventh years, and it by no means disappears even with the coming of adolescence. To be able to make things disappear — pass apparently out of existence — or to be miraculously metamorphosed before the wondering stare of boon companions, is enough to call forth a sort of hero worship for the juggler who is able to do it, and you perhaps have known of boys who passed many an evening in their playroom endeavoring to think the magician's thoughts after him. And fancy, if you can, the glass tumblers that were broken and the water that was spilled upon the floor in the vain attempt to empty a glass of water without *appearing* to do so!

And spruce gum! Where is the clever author who will write for us a whole volume on the lure of the spruce-trees? One of the chief attractions of the forest is undoubtedly the oozing gum from the spruce-trees. If you lived in the country you can well recall the innumerable trips to the woods, the exciting search after promising sources, the

blistered hands and cut fingers, and then finally the triumphant return homeward with pockets bulging with the precious gum! Other purposive activities are to be seen in the interest in fishing, the climbing of trees, the tunneling in the snow and the erecting of snow forts at strategic corners of the back yard, the playing soldier, the building of water-wheels to spin in the nearest brook, the diving and swimming — all these are just as vital factors in the training of a boy's mind and heart as are the studies which you teach him formally in school, perhaps even more so. The normal adult is just as much a creature of his play environment as he is a creature of his study environment; and neither will suffice as a satisfactory sort of training without the other.

The age of mischief. The small boy and mischief have long been synonymous terms, at least in the mind of the cartoonist and the wit. The reason for whatever truth there is in this metaphor is not far to seek. There comes a time in the Big Injun Age when the rapidly evolving boy ceases to have the faith in the symbolistic life of play which he had earlier. He is coming to be a realist just in proportion as life opens before him and dispels the idealism which earlier surrounded him. When this age of realism dawns the boy rebels inwardly at the silly doll play of his sister, and may even in a fit of wrath kick her doll-house down and chide her sharply for believing in such unreal things as dolls and doll-houses. Santa Claus has ceased to be a myth, and now he sagely denies the existence of any Santa Claus. His trains and carts and wheelbarrow even are no longer seen in the same light. The halo which cast its spell about symbolistic infancy and early childhood is now dispelled, and naked realities come to take their place. In such a state of mind, the time of life when the human is neither infant nor youth but stands within a sort of umbral shadow, boys often find it not easy to break with the past and embrace the present. There come days when the old games are no longer satisfying, when the call of wood or stream or of field is likely to go unheeded. The result is that, not know-

ing what to do nor which way to turn, they do the most unusual or unlikely thing — it is the age of mischief. Tricks upon other boys or upon older people are interspersed with practical jokes which may result unhappily for all concerned. Smoking and other bad habits find fertile soil in which to develop at this time. In many cases the customary reaction does not come in time, and boys enter upon unfortunate careers which ultimately may lead to their becoming really bad gangsters and perhaps eventually inmates of reform schools. It appears to be an age in which the boy is blindly seeking the light and striving valiantly to find himself. The term *puberty* is applied by psychologists to the age of life under discussion here. What does the word mean?

Girls' play. The play of girls is always less boisterous than that of boys, partly because they have more home duties which keep them from mingling with other girls of their age so constantly, partly because they are naturally more retiring, and partly because they are naturally more serious minded. But this does not mean that girls do not play boisterously enough on occasion; it rather means that the limitations of their sex places a mild restraint upon their sports. The girl is concerned with learning to use the finer muscle movements in embroidering and sewing and basketry; she is intensely interested in reading, usually much more so than boys; she loves such games as London bridge, ring-around-a-rosie, farmer in the dell, and others which can be played on the lawn or in the sitting-room. She is also concerned with exchanges of confidences with her chum or the other girls in her set, and passes hours strolling arm in arm with her friends jesting and conversing lightly about such engrossing matters as books and games and air castles and future careers and music lessons and a thousand and one other items of equal importance. It is the age of ideals and ambitions for the life which beckons rosily before them.

TOPICS FOR SPECIAL STUDY AND REPORT

1. What evidence can you cite from your own observation of the play of older children that it is social in its nature rather than individual?
2. Discuss the boisterous element in the play of boys and the play of girls.
3. What different forms have you known "mischief" in older boys to take?
4. There are several theories which have been advanced to explain the origin of play. Look up and report upon each of the more important of them, viz.: the Schiller-Spencer Theory, the Recapitulatory Theory, the Groos Theory, and the Relaxation Theory, citing the evidence for and against in each case.

THE LESSON APPLIED

1. Suppose, in order to make her instruction in any subject more interesting and effective, a teacher divides her class into two teams; how can this appeal to the instinct of play exert a socializing influence over the individuals?
2. How are such organizations as school improvement leagues, school congresses, bird protection clubs, school orchestras, baseball leagues, etc., socializing agencies? Do they have also a purposive aspect?
3. To what extent may the atmosphere of the school playground be made to contribute toward the socializing of boys and girls? Would free play hours or play periods supervised by the teacher be more satisfactory in this respect?

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LESSON 13

INSTINCTIVE BEHAVIOR OF CHILDREN (*continued*)

8. The Fighting Response

General characteristics of the fighting response. It has been contended that a boy never becomes a man until he has had a fight. Whether the adage be strictly true, one must decide for himself. In any event the very fact that most boys *do* fight more or less automatically upon the slightest provocation would seem to make any such general statement plausible. In the simple and immediate reactions of the boy a fight is the logical, necessary, and inevitable way to settle any dispute or misunderstanding or belittlement which he may have chanced to suffer at the hands of his companions. It is nature's earliest way; it is therefore the boy's native way. Boys do not permit themselves to any rigid analysis of motives. They have no fine-spun theories of arbitration or peaceful settlements of their grievances. Such a state of mind is the outgrowth of years of experience and thoughtfulness, both in the life of nations and in the life of individuals. The most natural sort of understanding is that arrived at by force of feet and arms and fists and teeth, as is true in the case of all other animals.

Earliest manifestations in infancy. In general the fighting response is called forth whenever some other of the instinctive tendencies has been prohibited from expression or thwarted in its satisfaction. In its most primitive form the fighting response is to be observed in the activities of very young children whose immediate desires are not gratified. For example, if there is a delay of a few seconds in the provision of food, the infant responds by kicking his feet and legs up and down, doubling and clenching his hands, and convulsively distorting his facial expression, accompanying all these muscular discharges with crying or fretting and

whining. Again, if the infant is repressed when it feels active, as for example being placed in the cradle or put prematurely to bed, it responds in much the same way. Or, if a desired toy is not forthcoming when wanted, or has been taken forcibly from it by worn-out parents, all the symptoms enumerated become at once in evidence and the fighting responses are made by the angry child. In a similar way if jealousy is aroused in it by preferences shown to a visiting child by the unthinking mother, who desires above all things to manifest a polite interest in her neighbor's infant, unmistakable and insistent symptoms of anger and rage are observable in the ensuing crying and perhaps actual abuse of the infantile visitor. The ownership response, when thwarted, undergoes a like transformation, as do other instinctive activities of infancy.

In older children. But as the child grows older he comes more and more to repress the crying and fretting which accompanied his earlier anger states, and relies increasingly upon the strength of his muscles to procure the desired privileges and advantages. If the mother attempts to remove the toy or to expostulate with him, he seizes it madly and may actually strike even her. If she remonstrates he will perhaps run away, thus temporarily at least proving himself superior to the forces which would repress and control his pleasure. When childhood is fully come, however, this attitude toward the mother or father has undergone a marked change, and the child no longer resents physically the will of the home. But if he controls his fighting responses while within the four walls of home he makes up for it with good measure when he is associated with his fellows on the playground. It is true that there are great individual differences in children in their response to the fighting instinct. Many of them either are not particularly pugnacious, or else they never chance to meet situations which would lead them to give expression to it. In such children about all the evidences there are of the fighting impulse are confined to occasional tilts with one another over trifling

matters of disagreement which never progress far enough to be termed real fights. It should be noted, however, that even the shrill tongue and the unkind speech and the cutting remark and the disagreeable attitude are just as much forms of expression to the instinct as are actual physical encounters.

In general the sorts of stimuli which favor the excrescence of the actual physical combat are of four kinds, viz.: first, the belittlement or disparagement of one's father or some other member of one's immediate family; secondly, the insult offered to one's pride in his own abilities or accomplishments; thirdly, immoderate teasing on the part of others; and fourthly, unfairness or cheating of a playmate. As for the first of these, the disparagement of one's relatives, little need be said in exposition. It has doubtless been a common observation on your part that one of the deepest insults which can possibly be offered by one boy to another is disagreeable reference to his parent, regardless of whether or not the insinuation happens to be true. It is at once the signal in any red-blooded boy to spring to the defense of his home or his people and avenge the wrong. Indeed, the defense of the family has always been one of the fundamental determinants of action in the whole history of the race; it is the same impulse which actuates the boy in his challenging of any disagreeable allusion to his own family.

In the second place, teasing as an incentive to battle, the response is not so direct and immediate. Up to a certain extent, teasing may even be distinctly pleasurable, but beyond that limit it becomes positively disagreeable and intolerable to the victim. A boy may bear for weeks and months at a time with the teasing of an older boy, and then suddenly fall upon his tormentor on some fine day and give him a sound thrashing and a much-needed lesson. Instances of this sudden explosion of energy long pent up are by no means rare, and you have very likely known of more than one yourself, either in your own early behavior or in the behavior of others. The same thing exists in the animal

world, and some small animal long the victim of unjust and persistent exploitation on the part of some larger member of his own family may turn upon his pursuer and not only hold him at bay, but actually punish him in a fierce physical encounter. It has often been said that in order to rid one's self of the persecutions of a bully the best procedure lies in bullying the bully, for often a sizable body harbors but a feeble will and slight courage. It is to be regretted, however, that often the victim lacks the courage of his convictions and continues to be the sufferer. In such a case the first statement which we made in this lesson applies with its true emphasis; a boy never becomes a man until he has had a fight.

The third incentive for the release of the fighting response is actual insult to one's pride in his own abilities or accomplishments. Let another boy sneer at a child's attainments in the schoolroom or his achievements outside, and the setting is made for the latter to challenge the former either to recant or to defend himself in physical combat, or, if prudence decrees otherwise, the one insulted nourishes within his breast the rankling grievance which may or may not at some future time be settled. For example, a jest at one's manner of speech, or of one's dress, or disparagement of one's collection of shells, or of one's composition, or of one's recitation, invariably sets the heart beating faster and summons up within one the fighting impulse, either to challenge the detractor then and there or else to speed ahead and prove one's self the better scholar or the more favored of one's companions. Thus either physical or mental *rivalry* may result.

Finally, fourthly, unfairness or cheating in a playmate may become the stimulus for an outburst of the fighting spirit. It chanced, for example, that a group of boys whom the writer was observing were enjoying a very short recess by coasting on a long bobsled down a steep hill. Halfway to the bottom of the hill there was a sharp turn in the road, which made it necessary for the coasters always to station

one of their number at that point in order to give them a signal of "clear track ahead," or of "danger" if a team chanced to be coming. One of the boys, apparently desirous of spoiling the slide which his mates were about to have — for the lot of policeman had fallen upon him — gave the "clear" signal and at once the big sled sped down the hill. When it had nearly approached the point where the boy stood he suddenly began wildly flinging his arms about and warning the steersman to turn aside, which the latter did, piling his passengers in a struggling heap in the snow. But there was no team coming! Forthwith the boys, and girls too, fell upon the hapless policeman and nearly stifled him in the deepest snowdrift available. Their fighting natures were aroused by the deceit of their fellow. It is ever so in our adult intercourse. For the deceiver and trickster we have nothing but contempt and scorn. There is not such a great difference after all between the values of a group of school children and a group of men and women.

The fighting response in girls. The manifestations of this instinct in girls are often limited to the bitter speech and the unkind remark, the tongue being considered among them doubtless to be their superior weapon. And sharp and incisive it is, too, as you very well appreciate if you have ever chanced to be a spectator of girlish disputes. It sometimes happens, though, that even girls fall upon one another in wrath at some slight or insult, real or imaginary, and then witness the deft slapping of faces and the hair pulling which ensue! Upon boys, too, the hands of older sisters and even of younger ones are often laid in no gentle way, but it is not necessary for boy and girl to be brother and sister in order for a quarrel to be precipitated. Boys appear to appreciate this fact, and wisely refrain from unwise approach into the vicinity of the long arms and quick hands of enraged girls. Still, one would have to seek far for data justifying the opinion that the fighting impulse among girls ever degenerates into the sheer brute combativeness which it not infrequently assumes in boys' disputations.

The origin of the fighting response. Primitive man was, as we have seen, continually surrounded with dangers, many of which he did not understand and from which therefore he was but poorly able to guard himself. His two chief sources of danger lay, however, in the larger animals and the other tribes of human beings which surrounded him, and the only positively dependable way whereby he could arm himself against both of these enemies was necessarily by evolving or developing the harder muscles. This he no doubt did by actual combats which he had with them, quite as much as by the hard, continual struggling against the rigors of the natural forces which encompassed him. Fighting was a necessary form of activity frequently employed in the earliest history of the race, and to its original fighters the race as at present constituted owes its preservation in the remote days beyond the dawn of history. The fighting instinct in boys and girls is therefore merely the remnant of one of the essential aspects of the racial struggle for survival.

TOPICS FOR SPECIAL STUDY AND REPORT

1. Observe all the fighting responses manifested during the day by an infant.
2. Report upon instances of any physical combativeness which you chance to see in children. If possible, discover the causes.
3. What has been your observation of the fighting response in girls?
4. Has the fighting response any constructive value in adult society?
5. Recall all possible instances of the appearance of the fighting instinct in your own childhood.

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LESSON 14

INSTINCTIVE BEHAVIOR OF CHILDREN (*continued*)

9. The Teasing and Bullying Responses; the Display and Approval Responses

What to look for in the observation period:

1. Whether there is any evidence of bullying or teasing on the playground during the recess periods.
2. Illustrations of the unquenchable thirst for approval which children ordinarily manifest with reference to their writing, drawing, recitations, acts of courtesy toward teacher, etc.

The teasing response. If you have ever chanced to watch a cat which had caught a small mouse, but which was unwilling to kill it at once, you have observed something of the teasing instinct in animals. The cat under these circumstances crouches upon the ground, watching narrowly the dazed but slowly recovering mouse until it has so far regained its powers of locomotion as to attempt to scurry unsteadily away; then with the speed of lightning the cat springs up and pounces upon it, thereby dazing it again, only to repeat the same procedure in another moment when it attempts to run away a second time. This play may continue for several moments before the cat finally puts an end to the misery of its victim. Such worrying of another creature is, translated into human terms, the teasing and, in more exaggerated form, the bullying more or less common among children everywhere.

The most interesting and comprehensive study of this instinctive response in children is that reported by Burk, to which we shall now briefly refer.

Burk's study. Among the nineteen groups into which Burk divides the 1,120 cases of teasing which are included in his study are the following: (1) Egoistic assertion of author-

ity. One of the cases falling within this classification states that "Willie (fourteen years of age) played with boys much younger than himself, and when tired of play he would throw away their hats, throw the little fellows into the mud, cuff their ears, and always send them home crying before they had played an hour." (2) Primitive blackmail, as illustrated in this: "A boy (nine years of age) goes up to a group of smaller boys playing marbles, puts their marbles in his pocket and walks off"; or this: "Boy would whip his younger brother until the latter swore, and then under threat of exposure would make the younger do the chores for him." (3) Tormenting, as in the case of "M. (nine years old) who, knowing that F. did not like to have her hair touched, tied it in hard knots when she was asleep." (4) Excitation of fear, as in this incident: "Willie was afraid of dogs. H. put Willie on dog's back. Willie screamed and cried. H. laughed." (5) Excitations of anger. "L. (eight years of age) had the habit of crying at little things. When the children at school found this out they would pull her hair, knock books out of her hand just to see her cry, and then they would call her 'Cry Baby.'" (6) Calling names. "The name applied generally is in some way related to personal peculiarities, as 'Long Legs,' 'Fire-Head,' 'Cry Baby,' etc." (7) Teasing older people with personal peculiarities. "Boys would throw stones at an old, eccentric man's house, until he came out and angrily told them he was writing down their names and would have them arrested." Burk's data include a great many other illustrations of the form which the teasing response takes in boys and girls. We have cited enough of them to give some idea of the extreme diversity of the response.

Obviously the teasing is directed always toward those children who will respond most satisfyingly to it: children take little delight in teasing those of their companions who do not manifest symptoms of displeasure or concern at their efforts, and soon learn to pick out from among them all the relatively few who are easy prey to their will. In fact

children often have an instinctive cleverness at singling out easy victims. The child who is timid or underdeveloped, or anæmic, or retiring, or peculiar in any way is certain to be victimized by the bully. Your own experience and observation will doubtless confirm this statement.

Lack of sympathy. Sympathy is an acquired or learned response far more than it is an innate one, and because they have not acquired it, children of the grosser nature possess no feeling for their prey. As well expect sympathy for the mouse in the cat as sympathy for the boy in the teaser. This utter failure of the child to put himself in the place of his victim is responsible for the extreme lengths to which he may go in obtruding his tyrannical will upon those weaker or less willing to resist than himself. Witness, for instance, the cold-bloodedness with which children plague half-witted boys. They are utterly incapable of the finer and nobler promptings of sympathy and forbearance which they will come to feel in due time as a result of their increased experience and wise training.

Bullying. Bullying represents simply the teasing response raised to the *n*th power. If he succeeds well in his teasing the very satisfaction which he derives serves to increase his boldness, and the boy degenerates into the bully. From being merely a thoughtless youngster seeking to amuse himself at the expense of his less strong-minded or strong-bodied fellows, he becomes a positive bully who coerces those younger and smaller than himself to do his will. This is perhaps the only one of all the instinctive responses which is absolutely and totally bad. And yet even the bully can with proper training and wise direction be transformed into a great champion for the rights and privileges of the weak, provided only you set to work upon him in full earnest and prevail upon him to turn his fine physique or his strong mind to the defense and protection of those of his play-mates less well equipped than he. The motivation of savage life was individualism; that of civilized life should be altruism.

Display and Approval

Evidence of display response in animals. It may be that you have chanced to see a peacock in the zoo or on the peacock farm during the rare moments when its beautiful tail was spread into a circle resplendent in its myriad of colors and shades. If so, you observed that the peacock was not content to display his beauty in privacy, but that he appeared actually to experience real delight in strutting back and forth in the sunshine before the appreciative onlookers as though for all the world he was proud of his looks! But if you have never happened to see a peacock during these moments of display, you have surely seen the cock strutting proudly about among his feathered subjects in evident fowl-consciousness of his thick-set body and long, feathery tail and arched neck, which no doubt inspire the less imposing hen to look upon her lord and master with no small amount of fowl-appreciation. Or again, you have been attracted, ever since the childhood days when you chased them laughingly over the fields, to the bright colors of the butterflies which flit idly about from flower to flower as though displaying their simple beauty to whomsoever chances to see and admire. Indeed, the butterfly has come in our speech to be synonymous with vain beauty without any aim in life other than the display of that beauty. Can you not think of other illustrations of vanity in the lower organisms which are more or less akin to the display responses and the approval responses of human beings?

Display in primitive life. You learned in your study of the Indian that one of the remarkable traits in his behavior was the importance which he attached to war-paint and feathers and beads and wampum. It is probable that the employment of these materials in his decorations had a twofold purpose: the one, to inspire terror in the hearts of his enemies, and the other to attract and win the approval of the female. As an illustration of the first of these values which the Indian attached to decoration of the person,

recall the descriptions which you have read of the war-dance in which every warrior participated. With paint-smearred faces and befeathered braids they danced in increasing fury about the totem-pole until they had worked themselves up into a mad frenzy, and then they darted away into the forest to join battle with the enemy, trusting quite as much to the hideousness of their make-up as to the valor of their arrows and clubs and tomahawks to strike terror to the hearts of their foes. But there was another aspect to the same war-dance. Squatting in the lurid background of the central area of the settlement where the warriors were dancing were the women of the tribe looking with discriminating eyes upon the art and the dress of the dancers, and it may have been that he who was most brilliantly painted and most befeathered and most fleet of foot set the hearts of all the unmarried maidens beating the faster as they built air-castles of the future in which the besmeared warrior found a prominent place. The art of decoration in primitive life was, in other words, a practice socially necessary either to the preservation of the tribe from danger or to the attracting of a mate. Have you learned something of this same putting on of color and hue and adornment by insects and lower organisms in order to attract a mate?

The response in civilized adults. But the desire to display and the thirst to win approval did not disappear with the passing of the savage stage in human development; they merely underwent certain transformations in keeping with the spirit of the times, and you will find innumerable illustrations of their persistence in more or less modified form in every normal adult whom you meet or about whom you read. It is the influence exerted over us, for example, by these instinctive forms of behavior which actuate us all to seek approval for our acts and opinions and by the same token to seek to avoid disapproval for them. There are few of us who do not feel the thrill which comes with a word of appreciation or approval on the part of the group in which we move; and in many persons the thirst is so strong that

many are actually led to court such expression, often to their own mortification. Every one desires success in his business or profession quite as much that he may win the social approval of his fellows as that he may maintain his family in comfort. The good will of one's neighbors is usually of more intrinsic worth to one than is his money. The cherishing of one's good name, the maintaining of one's personal honor, the walking circumspectly within the law are all aspects of the desire for approval which is implanted from most primitive life in every human breast. Even one's ambition leads him on to a position of greater influence and usefulness not more than to one in which he can deserve and receive the approval of society. Occasionally, it is true, this thirst for approval leads to undue and immoderate display, as in the case of the woman who dresses extravagantly or immodestly; but for the most part civilized beings of mature age turn their efforts away from the more primitively rooted *display* and toward the more cultivated and *social approval*.

Display in children. It is true, however, that in young children who are still more primitive and closer to the heart of nature the grosser instinct of display occupies a very prominent place. From the time when it begins to be interested in showing off its new toys or in calling the attention of a guest to its curls the child is a *displayer*, par excellence. Note, for example, the pride which the young child takes in a new dress, and how consciously she trips along the walk in order to display it, not unlike the peacock or the butterfly. And new shoes! You will probably not find it difficult to recall the conscious pride which you yourself took in a new pair of shoes, and how happily you walked to school or to church in them, stopping anon to gaze down into your own reflected happy face in the toes. You may recall also that you compared them secretly with the older and more worn shoes of some playfellow, and inwardly pitied her who could not have a new pair like yourself. Observe too the pride which children take in displaying some bit

of school work, whether or not it is particularly remarkable in execution. I have recently seen in the schoolroom a boy who eagerly displayed to the other children and to the visitor a house which he had drawn on his tablet, though it would have taken a genius to determine that those uneven lines and dashes on a smeared and crumpled sheet of paper represented a house! Yet such is the simple compellingness of the instinct to display.

Not long since there chanced to be visitors present in a schoolroom where there was too little opportunity offered for the children to show themselves off for what they believed they were worth. In consequence of this felt lack a seven-year-old girl was seen to take a block of paper from her desk, tear out of it a perfectly new, clean sheet, crumple it up in her hand and walk calmly out across the front of the room and as calmly and slowly throw it in the waste-basket! And all the child had to display was a flaming new hair-ribbon! If you are at all familiar with the *modus vivendi* of the schoolroom, you have observed times without number children who were eager to display some piece of handiwork, or some bit of writing, or some ability in spelling, or even clean hands and finger-nails at the morning inspection. Among themselves, too, children take great pride in their report cards, their collections, their dolls, their white rats, or even the wound which they received in a scuffle or the wrist they burned on the stove or the finger they cut with their new, sharp knife. There seems to be no limit to the diversity of their interests and the pride which they take in display. Witness, for example, the boy who came to school recently with no less than a dozen buttons displayed boldly on his lapels, including Liberty-Loan buttons, Red-Cross buttons, political buttons, Sunday-School buttons, and one which read "License to butt in" (!) and which he seemed prouder of than all the rest, judging from the boisterous and ostentatious manner in which he proceeded to put its motto into effect upon the playground.

And then think of the child's desire for approval on the

part of parent, teacher, and chum. With what eagerness and earnestness does he seek always to do the teacher's will, to anticipate her slightest wishes in the way of erasing a blackboard, or carrying her books to and from school, or stooping to pick up her pencil from the floor. And how he strives to improve the "curve" of his ball, or the trustworthiness of his muscles in order to win the admiration of his fellows. Social esteem is as sweet to him as to the adult, and social contempt every whit as bitter. So with the girl, although she is probably not usually as active in her solicitations of praise as is the more thirsty boy.

TOPICS FOR SPECIAL STUDY AND REPORT

1. Report upon any instances of teasing which you chance upon in children. Observe especially the reasons why the victim is the victim.
2. Enumerate several things which you have observed that people do partly at least to be approved by others.
3. Observe as many children as possible and note the prominence of the approval-display response. Report your results to the class.

THE LESSON APPLIED

1. What direct use can the teacher make in the classroom of the natural desire for approval which actuates children so that they will be eager to do their very best possible work?
2. Is there any danger that those children who are possessed of but mediocre ability may lose interest in their work if the teacher makes too open or frequent appeal to the instincts of emulation and approval?

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 1. Burk, F. "Teasing and Bullying"; in *Pedagogical Seminary*, vol. 4, pp. 336-71.
- b. On approval and display:*
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 3. Thorndike, E. L. *Educational Psychology*, vol. 1, *The Original Nature of Man*, pp. 89-91.

LESSON 15

INSTINCTIVE BEHAVIOR OF CHILDREN (*continued*)

10. The Rivalry Response

What to look for in the observation period:

1. Indications of rivalry in the upraised hands of the children whenever a question is asked by the teacher. (Especially in the lower grades, and regardless of whether the children can answer the questions asked or not.) Why?
2. Other illustrations indicative of the rivalry among the pupils in securing the approval and notice of the teacher.
3. Whether there are any indications that the teacher is endeavoring to turn the instinct of rivalry to advantage. Are there, for example, honor rolls, "health teams," etc.?

General characteristics. The rivalry response is interwoven closely with the other instinctive forms of behavior and is in itself merely a higher form of the fighting response. Just as a boy will oppose the thwarting of his desires by fighting, so he will strive equally hard on occasion to excel his fellows by putting forth his best energies in other than pugnacious effort. Thus, he may respond to a thirst for approval which he fails utterly to win in either one of two ways: he may challenge his detractors to physical combat, or he may redouble his efforts and so come ultimately to excel them in the very field in which he failed before, thereby winning their approval and even admiration of him as a playmate. If he follows the latter and wiser line of action, he will be actuated by the motive of *rivalry*. The end of rivalry is, therefore, approval; the former instinct is in the nature of a handmaiden to the latter. Rivalry becomes, in its finer manifestations, a straightforward, social striving for the approval of fellow, group, or class.

The response among adults. Rivalry is at the basis of many of our adult forms of response, and perhaps occupies

a place in our innate equipment second only to the self-preservative instincts. You see all degrees of it at any time and in any group. You see alike its finer and its grosser aspects. As an illustration of the last, witness for example the absurdities and the extravagances of dress and style which milady displays in her circuitous game of "keeping up with" the other ladies of her acquaintance in the matter of her personal appearance. Another instance of the same grosser aspect of the rivalry response is to be seen in the multiplication of automobiles among those who can but ill afford this indulgence of their determination to keep up with their neighbors. Can you think of other negative phases of the rivalry or emulation response in adults?

But there is distinctly a positive side to the instinct to emulate. It is observable in the business rivalry which seethes among men of business to outstrip their competitors and rivals by underselling them or, on the negative side, by absorbing smaller businesses in their own. The trust is after all but the natural and logical culmination of the innate desire in every human breast to excel or outstrip or outdo every one else in our field. The motto "live, and let live," when applied to the existence of small, independent businesses, is quite likely to be too ideal to find universal application. Still, the rivalry observable among men in everyday life tends usually rather toward the positive than the negative. It is a constructive, energizing, driving force which incites us all to do our best and to exert our highest efforts in the furtherance of our social or moral or professional interests. The reward is the satisfaction of knowing that we have done our best; it is also the approval of our friends.

The rivalry of children. The simplest and crudest form of the rivalry response is to be seen obviously in children who make no conscious efforts to conceal their satisfaction in winning out over their fellows, yet who may make the most consistent and transparent efforts to do so. Even the infant displays a goodly amount of envy (which is the touch-

stone of rivalry) when the parental attention and caressing chance to fall unduly upon another child. Under such a condition it responds by striving actively to win over the coveted endearments for itself. Since, however, the rivalry response is social in its nature, it is apparent that it does not come into its own in children until the dawning of the ganging age at seven or eight years. Once it does come to occupy a place in the behavior of boys and girls, however, the part which it plays is indeed a conspicuous one. You will find children striving to rival each other in nearly all the activities in which they participate, from the collecting of seashells to the pitching of a ball or the hooking of a fish. What juvenile fisherman is there, for example, whose heart does not lie like lead within him at the unmatched success of a companion in the landing of a trout or an eel or a perch, while one's own line hangs limp and lifeless in the water! And with what deceit does that hope which springs eternal in the human breast continually lead one on to rival one's fisherman friend at least in his own imagination! Or suppose the activity engaged in severally be the discovery of the rare four-leaved clover among the other verdant grasses and leaves of the dooryard. There are few of us who have not some time in our lives passed through the four-leaved clover stage, when hour after hour of aimless yet satisfying childhood was consumed on one's hands and knees searching diligently for the coveted treasure, not because of any intrinsic importance in the process or value in the product, but merely in order to be able to match the boasted declaration of a rival with at least *one* more clover. In a similar way note the passionate eagerness with which children search through the fields in springtime for the largest bunch of wild flowers or the rarest specimen of blossom.

In general it may be said that the instinct of rivalry in children concerns itself with any superlative trait or possession which one child can boast as opposed to like traits or possessions of another. Thus, there is boundless satisfaction to the possessor in owning a larger sled, or a fleetier

one; in owning a larger cart, or a larger gun, or a better bicycle. In a similar way, there is deep satisfaction to the child in being able to whittle out the best and shapeliest boat, or in rigging it with the most graceful sails; or in being able to make the shrillest whistle from an alder stick; or in knowing how to fashion the strongest bow and the truest arrow; or in knowing how to trill one's voice best — and what hours boys spend in practicing this childlike art! There is likewise a deep inner joy in knowing where the fish run largest and shiniest; or in knowing where the largest fruit and the ripest berries are — and what child does not? — or in knowing how to tie the strongest knot, or to weave the longest plait of oak-leaves, or to trap the wildest wood-chuck. And, if these more elevating interests fail, there are contests of strength or cleverness a-plenty wherein boys can satisfy their thirst for leadership. Inferring that all other sources of rivalry had for the time being failed, the author not long since was an interested observer of a small group of boys who were pitting against each other their expectorational strength and agility in determining who of them could spit the farthest! Supply of available saliva being speedily exhausted, this game degenerated after a few attempts into a contest to determine who could spit the most times in a given period! To such immodest or vulgar depths does the thirst to rival one another occasionally plunge its possessors!

It is true for the most part, however, that available fields of effort wherein rivalry is possible are all but limitless, and children are rarely forced to pit their skill or resources of spitting against one another. Every boy likes to be a leader in something. It usually happens, however, that few of them are so equipped temperamentally or so natively endowed as to make possible the attainment of their desires to this end. Most boys cannot be leaders. On the other hand, the great mass of children are more or less alike and so can compete with one another in nearly everything. It is only the natural leader who is an outcast in the competing. His leadership is

taken more or less for granted, and, far from endeavoring to outrun or outplay or outwit him, the great mass of children are content to pit themselves against their fellows of equal qualifications for the purpose of carrying off temporarily at least the honors of their striving and competing. It is doubtful whether this impulse to excel others ever comes consciously into the minds of children. It appears rather to compel them without revealing to them its identity. It is enough to run and shout and trill and wrestle and jump for the sheer pleasure residing in such activities, and the pleasure is sufficient reward; but back of it all lurks the omnipresent instinct of rivalry.

Mental rivalry. Rivalry in actual school work where mental effort plays the significant rôle is not, however, so easily brought about. Mental keenness and alertness are far more recent acquisitions in the life of the race than are the purely physical responses; hence they do not so compellingly influence the behavior of children as do the latter forces. An instinct depends for its strength upon the length of time which it has existed in the history of the race. Thus, the instincts to preserve the organism, to perpetuate it, to feed it, and to protect it are among the very oldest and strongest agencies in controlling behavior. Rivalry, in its mental phase at least, ranks with imitation and modesty and the other forms of behavior — influencing agencies which are only partially instinctive in their basis. Still, there undoubtedly does exist in children a desire to excel their fellows in school work and school activities, although it is often difficult to determine in how far other instinctive responses, such as display and approbation, come in to assist in the matter.

There can be little question, though, that the pride which children display in having their compositions or drawings commented on by the teacher, and perhaps hung in conspicuous places about the schoolroom, has a distinct basis in the instinct of rivalry. If you have ever observed a class of first-grade children during the time in which the teacher

was developing a lesson, you have noted a very interesting phase of this rivalry response in the eagerness with which the children vied with one another in answering the questions asked by the teacher. It did not matter whether they knew the facts requested, or indeed that they even understood the questions asked; every hand was upraised, and every hand competed with every other in securing the teacher's leave to speak, often to the confusion of the very child whose hand was most lively when he was permitted to contribute his vaunted share in the lesson. You have doubtless seen a myriad of small flying hands gyrated dangerously near the teacher's face when the youngest children were around her in a semicircle, and have perhaps marveled that they did not actually smite her in their earnestness.

Then, too, how children will work for a prize offered by the teacher as an incentive to their flagging attention! The prize may and should be nothing more than a cross after one's name or a star upon the blackboard: it matters little. The child who has the largest number of stars is secretly and frequently outspokenly envied by those less fortunate; and usually envy is sufficient to stimulate the lagging ones to redouble their efforts in order to rival the rest. In like manner standing at the head of the class is a blissful though momentary privilege for, with the fluctuations of fortune, one is certain to be displaced very soon by the next below, who in turn must yield place shortly to another.

As the child grows older and passes out of the earlier grades and into the upper ones, and ultimately out into higher schools or into life, the conscious side of rivalry comes to the fore, and now there is more systematic and continued effort to rival others. It does not cease, as we saw, with the attainment of maturity, but continues to be a strong motivating force within most of us so long as we mingle actively with our fellows. Its danger obviously lies in the possibility of its making the child selfish and thoughtless of others in his work or play, traits which, if they continue into maturity and adulthood, will wreak havoc with

the whole society in which he moves. The only salutary rivalry is friendly rivalry.

TOPICS FOR SPECIAL STUDY AND REPORT

1. Report upon any instances of rivalry which you observe among children or groups of children.
2. Make a list of some good and some bad results of the rivalry impulse. Be concrete as far as possible.
3. Have you observed any incidents of rivalry in animals?

THE LESSON APPLIED

1. Would it be wiser for a teacher to encourage rivalry in school work between groups or between individuals? Why?
2. Recently there was found a teacher who at the beginning of the school year offered a valuable prize to that pupil who at the end of the term should have made the greatest general progress in school work. What was the psychological effect of this upon the pupils? Was its effect upon some of them quite different from what it was upon others?
3. Would there be greater all-round satisfaction if our schools were so graded that bright children were associated only with bright, and dull only with dull? Can you think of any objections to such a plan?
4. Does educational value inhere in such activities as school exhibitions and entertainments, interschool ball games, school savings banks, fairs, and other agencies that tend to promote intellectual or physical rivalry among the participants?

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LESSON 16

INSTINCTIVE BEHAVIOR OF CHILDREN (*continued*)

II. The Curiosity Response

What to look for in the observation period:

1. Evidences of the curiosity response of the children, as shown:
 - (a) By the questions which they ask.
 - (b) By the interest which they manifest in new facts or principles that they learn.
 - (c) By the tendency which the lesson has of being frequently "side-tracked," owing to some one's desire to push an interesting thought further.
 - (d) By the profoundness of their attention during the most interesting moments of learning some new and strange fact.

General characteristics. You have by now doubtless begun to suspect that all the instinctive responses are more or less closely connected with one another, and this is actually the case. The whole racial background of human life, as present in the infant, is a mosaic in which each tendency inherited from the past is closely joined with each other tendency. In the case of the curiosity response this connectedness is particularly noticeable, for it is closely related, now to the impulse of general physical activity, now to that of collecting, now to that of the *Wanderlust*, and now to that of simple play. It is at once the genesis of attention and the energizing motive of much of juvenile activity. It has been one of the most potent factors in the evolution of knowledge and progress.

Curiosity of adults. You have doubtless recently been engaged in study or reading at a time when others in the same or an adjoining room were in conversation. For a while your interest in the book before you was sufficient to keep your attention from wandering to the other group of people. But let one of the friends chance to mention your name dur-

ing the conversation, and lo! your concentration is dissipated immediately, and you hasten to determine what is being said about you. In other words, your curiosity got the better of you, and you were compelled, against your will, to satisfy it. Or again, suppose some one in the street gives the cry of "Fire!" Instantly you hurry to the window and look up and down to see where the fire is. At the same time you will see others hurrying up the street, led on by the same curiosity, and the chances are that you will yourself join the ever-growing company of the curious, and that the book will be quite forgotten for hours. Witness, too, the attraction which the side-show at the fair possesses for the patrons. That booth which is the most sensational or lurid in its advertising, or before which the loudest-voiced proprietor announces the attraction within, is the booth which is certain to draw the largest crowd, every one being curious to investigate the mysteries within, and the faker reaps a golden harvest. Thus gullible is the average human being to the art of the showman! Witness again the rapid increase in numbers of the street crowd that gathers near the scene of an accident, or of some show-window exhibition, or even of a piano being moved from a fourth-story window. Let one person stop, and a second is likely to stop. Let one man pause to look up at some unusual spectacle and he is immediately surrounded by a score whose curiosity impels them to do likewise. And then think of the curiosity that we all have in investigating some interesting situation or process, from the inspection of a jail or an insane asylum to that of an automobile factory or a textile mill.

A great amount of curiosity, too, attaches to old-fashioned or historic regions or buildings, as for instance, to the birth-place of a great man or woman, and it is always a matter of much interest to the sight-seer to sit in a chair which George Washington sat in, or to eat one's luncheon in a grove wherein the great and mighty of the earth have eaten and rested and frolicked. The strength of this same instinct of curiosity is to be observed in the eagerness manifested by most of us

to see a great man, to touch his hand, to hear him speak, and perchance have the rare privilege of taking a short walk with him or of listening to his conversation. On the higher levels of achievement the same force is apparent in the delving into science, or history, or literature, or art; in the experimenting and the exploring and investigating which are such fascinating fields of effort to all of us, according to our abilities.

Curiosity in children. In earliest infancy the response comes into evidence; you have seen it in the intense interest which the four-months-old baby takes in examining its hands and fingers and toes, for all the world as if they were entities quite disconnected from itself. You have seen it, too, in the earnest attention which it pays to the sunbeam playing upon the floor or trembling on the wall. In a similar way the ticking of the clock upon the mantel may hold the infant's fluctuating attention for minutes at a time, and is sure to attract it a dozen times a day. If another baby chances to come to visit the home, its gaze will be riveted upon the stranger for perhaps five or ten minutes before any further advances are made. Very likely you have observed two infants thus accidentally juxtaposed who continued to stare at one another until some object more compelling coaxed their eyes away. We have already noted the avidity with which children place everything available in their mouths; this, as we pointed out earlier, is in part due to the food-getting instinct; it is in part also traceable to the instinct of curiosity. In fact the young infant depends quite as much upon his mouth as a sense determiner as he does upon his fingers or his eyes or ears. It is only as he grows older that he no longer relies for information upon his sense of taste or his general oral sense of shape, size, and consistency.

Other illustrations of the working of the curiosity response in children are not far to seek. The child who takes delight in tearing paper is curious as to the nature of paper. The child who bangs his rattle upon the floor is curious as to the

hardness of the floor or the interior of the rattle. The child who studies passing vehicles or stares at strange and unfamiliar faces is curious as to the nature of vehicles and of people's faces in general. One child of three years pulled her doll apart with much zeal in order to find out what was inside of it. She found that it was only sawdust, but her curiosity was satisfied, and that was all that mattered. You have probably seen more than one child swinging on his gate aimlessly, while all his attention was directed out into the passing panorama of life upon the street. That child was endeavoring to find out something of the strange world in which it found itself. So, too, you have seen children delving in the garden with their small shovels in a whole-hearted attempt to solve the unseen mysteries of the interior of Mother Earth, and every strange-shaped stone or every worm or every bit of bright glass turned up by their industrious efforts satisfied a felt want within. Natural phenomena are especially interesting to children, and many are the questions asked by juvenile inquirers, led on by an insatiable thirst after knowledge which should put adults to shame, concerning the nature, structure, origin, purpose, etc., of the sun, the moon, the stars, the wind, thunder and lightning, snow, rain, and hail, and a host of other elements. So with animals and insects. What child is not totally oblivious to all other surroundings who is engrossed in watching a toad casting his skin, or a bee humming in a wild-rose blossom? It was the great Swiss teacher, Pestalozzi, who exclaimed on one occasion while watching his own little child, Jakobli, drinking the great truths from the book of Nature: "How idle for mere humans to attempt to teach children when Nature is their surest teacher!" And surely the gentle Swiss teacher was right.

You remember the beautiful poem about "The Village Smithy," beginning: "Under the spreading chestnut-tree the village smithy stands," etc. Do you remember also those simple, masterful lines which depict the children "coming home from school" who love to "look in at the

open door"? It is the same impelling inner force of curiosity which made the children "love to watch the flaming forge," and the poet himself well recalled those days long ago when he was one of the semicircle of eager onlookers "under the spreading chestnut-tree." There was an education in the old-time blacksmith shop, now fast passing into oblivion, which was invaluable to the boys and girls whose curiosity led them to follow all the many processes of shoeing a horse or mending a wagon — an education which even the modern ever-multiplying garages fail utterly to continue. And yet how curious children are about automobiles and engines and self-propelling vehicles generally. The writer recalls well what a source of endless delight it used to be to him to ride in the locomotives which puffed up a spur track in his own boyhood town, and with what marvel he watched the manipulation and control and mechanics of the tiny engine. Witness boys' never-satisfied love of railroad stories as an indication of this same curiosity concerning the many processes involved in the operation of a railroad. Besides these, children are always curious about sealed or tied-up packages — as indeed are all of us; they are curious about matches and fires; about seeds, and one child actually dug up the beans that had been planted a few hours before to see whether they were growing all right (!). They are curious, too, about the origin of life, the meaning of death, religious rites and their significance, and they are curious concerning the Deity.

Destructive aspect of the response. But all this thirst after knowledge results sooner or later in the destroying of a great many different objects with the purpose of determining the substance of which they are made, or the force which makes them move, or the source of the sounds which they emit. As instances of this destructive phase of curiosity may be mentioned the two-year-old who broke his toy gun in order to find what made it pop; or the three-year-old who took his toy cow to pieces to discover the origin of the "moo"; or the four-year-old who took the clock apart to

find out what made it strike; or the six-year-old who broke in her doll to search out the mystery of the closing and opening of her eyes; or another four-year-old who cut off her doll's hair in order to prove whether or not it would grow again; or the seven- and eight-year-olds who broke the family thermometer by placing the bulb upon the hot stove in order to see how high the mercury could be forced to rise in the column; or the six-year-old who destroyed his toy violin to determine the reason for its making the sound which it did; or the five-year-old who cut in the head of his drum for the same reason; or the eight-year-old who broke the family cuckoo clock in a vain endeavor to induce the cuckoo to come out! Besides these and scores of other illustrations about which you may easily read by studying *Reference 1*, one five-year-old boy tried with all his might and main to pry open the jaws of his uncomprehending dog in order to find out what made him bark (!).

And then there are the omnipresent "Why" questions, at once the source of joy and misery in the parent and older sister or brother. Listen some time when you chance to be riding on a trolley car to the variety of questions asked by a two-year-old or three-year-old child about the car and the conductor and the motorman and the bell and the people and the controller and the stopping and the starting and a score of other things which come under the observation of the indefatigable young student of the mysteries of the trolley car. These questions are in themselves an unmistakable evidence of the curiosity which rages in the breast of every child. It is Nature's way of introducing her child to the wonders and the actualities and the potentialities of the universe. To evade or falsify would be a positive insult to Dame Nature, who merely provides parents and older children in order to satisfy the curiosity of those young and tender in years. Once such satisfaction has been given to the uttermost, parents and older persons generally lose their prime capacities in this world.

In older children the instinct grows none the less potent

as a factor influencing the education of boys and girls. It does, however, undergo certain modifications, inasmuch as the simpler truths about the universe have by this time been learned. But it remains throughout youth and into adult life as one of the keenest mental tools available in the future citizen's search after knowledge. In science and exploration and investigation it is the primary force which suggests and guides.

Its origin in primitive life. Primitive man had always to be on the alert against surprise by strange animals or unwonted natural phenomena. Hence any unusual occurrence, such as a stealthy noise, or an approaching object of unusual proportions, had necessarily to be accorded strict and unwavering attention until its meaning was explained or its significance discovered. This was the origin of the instinct about which we have been studying in this lesson. It is based, therefore, in primitive necessity, as have been all the other instincts which we have discussed. In modern life its need no longer exists as a safeguarding agency against surprise from a wary foe or an unfamiliar phenomenon. It has rather undergone in the process of thousands of generations an evolutionary modification, so that at the present time it is concerned with any *unknown* phenomenon, regardless of whether such phenomenon be or be not harmful or destructive in nature.

TOPICS FOR SPECIAL STUDY AND REPORT

1. Observe an infant for ten minutes, taking special note of all illustrations of curiosity motives which you see manifested.
2. What things during the past twenty-four hours have excited your curiosity? What steps did you take to satisfy it in each case?
3. What part has the instinct of curiosity played in past achievements of note, such for example as the great discoveries?

THE LESSON APPLIED

1. Is the presence of the curiosity response in children of any material aid to the teacher? Specifically, in what ways?
2. How does the socialized school appeal more directly to the instincts than is likely to be true where no attempt at socialization is made?

3. In a socialized class in civics, the children were discussing the question of whether any man who did not habitually vote could be a good citizen. The opinion seemed overwhelmingly positive that he could not. But a little Swedish girl declared that her father was not allowed to vote because he had been born in Sweden. At this a Polish girl insisted that her father had been born in Poland, but that he had voted last year. The class was quite at sea: apparently the United States treated a Polish-American better than a Swedish-American. This inference was not, however, entertained long, for it was generally agreed that the United States treated all alike. The deepest curiosity was aroused, and a committee of three was delegated to confer with the local judge in order that the truth of the matter might be found out. Might it be possible to make all the instruction of the school-room as appealing as this? Why was it appealing?

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LESSON 17

INSTINCTIVE BEHAVIOR OF CHILDREN (*continued*)

12. The Maternal Response

In animals. You have doubtless at some time or other in your life witnessed the distress of a mother bird or a father bird, or of both, when they made the discovery that their nest had been blown down or torn down and the nestlings within destroyed. For hours, and perhaps for days, the parent birds were to be seen hopping disconsolately about the vicinity in the vain hope that the lost would be found; and for days their mournful songs hovered over the place until perhaps you came very near weeping yourself at beholding the sadness and misery of the bereaved. This is an illustration of the *maternal instinct*, or the *mothering* instinct in birds. But the response is by no means confined to bird life: it is found in every higher organism known, although its strength and permanence depend largely upon the place which the organism occupies in the scale of life.

In the hen watching over her brood the same maternal instinct is observable. Let a hawk approach and instantly her feathers ruffle up and she may even dart into battle against the marauder whilst her chicks scurry to cover. Or it may be nothing more than the farmer's wife herself who approaches the spot where the brood is burrowing; the response is apt to be the same: the hen becomes cross and disgruntled and may even fly passionately at the intruder, especially if she attempts to take up one of the chicks. In the same way the mother cow, when her heifer is taken from her, manifests symptoms of the most extreme distress and usually has in her eyes for days a reproachful look which, taken together with her passionate and long continued lowing, indicates a very nicely developed parental instinct. So the cat, deprived of her sizable litter of tiny kittens, mews

longingly and searches about for them for days afterward, and may even make attempts at mothering other litters or broods as a solace to her grief. During this period she is unusually lovable and responds much more readily than usual to the caressings of children, as though thankful for the sympathy accorded to her. If you will note the pride in the eyes of either cat or dog over their offspring you will appreciate far better than otherwise the nature of the maternal instinct in animals and the influence which it exerts over their behavior during the entire period of the helplessness of their young.

Still, the response lasts only for a brief time. The bird soon forgets the robbed nest and the destroyed nestlings; the hen within a few weeks actually forsakes her brood and never afterward has anything to do with it; the cow is despondent for a season, but is shortly resigned to her loss; the kitten is soon weaned, and after that the close relationship between it and the mother cat exists no longer. It appears to be only in human beings that the maternal instinct abides and endures across all gulfs and beyond all separations. Herein is one of the gentle evidences of the towering superiority of man over the animal. The long period of infancy, to which we have referred before, has operated in the past ages of the race to bind the family more and more closely together so that its ties are never broken.

In adult human beings. To the stimulus *child*, a woman responds by smiling at, petting, fondling, snuggling, etc., regardless of whether or not it be her own offspring. To the same situation, a man responds in a less demonstrative manner, but none the less interestedly by smiling at, watching, and perhaps stooping to talk with it. If, for example, you chance to be riding on a street-car, you will notice that the adult occupants are not concerned with studying the grouchy gentleman buried behind his newspaper, nor the lady reading the latest novel, nor the party engrossed with his own thoughts; rather the unoccupied riders are watching with deep interest the actions of the three-year-old who is now looking out of the window, now staring hard at the bell-

rope, now asking a multitude of questions of its mother, and now venturing hesitatingly across the aisle to be friendly with some one to whom it is particularly drawn. It is as though we adults had within us keen memories of the lost paradise of our own childhood, and were eager to let those memories be revived by the spectacle of other infants still in that mystic and delicious age. As a matter of fact, however, it is probably the dominance within us of the maternal instinct, more than any other force, which draws our attention involuntarily to the little child. Nay, even your grouchy gentleman will sooner or later withdraw himself perforce from the depths of his newspaper and watch the infant in spite of himself, as will also the novel-reader and the introspective party. Such is the appeal of innocence and infancy to us all. The child crying bitterly upon the street is the infallible stimulus which prompts every one within range of its cry to pause beside the heart-broken one and to sympathize with and mother it. It is a response as old as society itself.

And then think of the tremendous appeal which the story of an unhappy or misunderstood or repressed child has for all of us. If you have read the story of Little Nell in Dickens's *Old Curiosity Shop*, and have followed the little waif toiling about the rough countryside with none but poor old Grandfather Trent to support and comfort her, your heart must have been stirred within you to the beauty and nobility of the child's soul, and the mother instinct within you yearned over the tiny, brave little creature. And so with *Oliver Twist*, and *Little Dorrit*, and *Paul Dombey*. And so with every other child of fiction for whom the author succeeds in creating sympathy and love in his readers. Then there are the orphan, and the foundling, and the deformed and the crippled and the poverty-pinched, across whom we come and among whom we move to a greater or less degree in our everyday lives; the maternal within us overpowers us at times when we contemplate unhappiness or limitation in any form in the innocent children. Perhaps

the suffering of the children of France, and Belgium, and Serbia, and Armenia, and all the other war-swept lands of Europe and Asia, caused more realistic appreciation of the horrors of an unjust war waged against children as well as nations than did any other factor before our own entrance into the struggle for right. Even the sight of a suffering, tearful childish face is a spectacle which few of us can endure without immediately taking steps to bring relief and happiness and proper joy back to it. The maternal is one of the very noblest of all human instincts.

The maternal instinct in children. Of course the greatest illustration of the maternal response in children is to be found in the doll-play of girls — and boys, too, for boys enjoy dolls almost as much as do girls. Dr. Hall and Dr. A. Caswell Ellis found in their study of dolls that 82 per cent of all boys and 98 per cent of all girls under six years of age admitted their fondness for doll-play. Naturally, however, boys outgrow dolls more quickly than do their sisters, and so we are apt to infer that dolls are *girls'* toys only. We have already referred to the collection of dolls made by one child to the number of thirty-two before she was ten years of age. There are very few girls, indeed, who do not number among their choicest possessions of childhood at least one or two of them. And even in later girlhood and in young womanhood it often happens that one will bring down her childhood's dolls from the attic or from some forgotten drawer and pass long hours on some rainy day, living over again the sweet memories of girlhood and girlhood's dolls. Ask yourself honestly whether you still remember your old dolls and still take secret delight in fondling them; your reply will be, I am sure, in the affirmative. The maternal instinct is strong in every normal person, and not infrequently continues to find its satisfaction in the dolls of yore until it finds its fullest consummation in the actual possession of children.

The material out of which dolls are constructed matters little to children ordinarily, although wax, paper, and china

seem to be the favorite; if, however, such are not forthcoming, then rag dolls will do just as well. In the study of dolls referred to above, it was found that children made their own dolls often out of pillows, sticks, bottles, corncobs, clothes-pins, and even cats. Half the delight appears to be in dressing these strange dolls, made while one waits, as it were. And yet there can be little doubt that down deep in the heart of every girl there is a yearning for at least one doll of the finest material and the costliest apparel, for exhibition purposes if for no other. You recall doubtless the story of Cosette in *Les Misérables*. Poor Cosette, who had never possessed a doll in her life, stood in the gathering dusk by the bright windows of the toy-shop next to Thénardier's tap-room and gazed long and ardently, yet hopelessly, upon the beautiful pink doll stretching its arms out toward her from within the window, little dreaming that ere another day had passed this treasure, this delicious breath from heaven, would be reposing in her own thin, emaciated arms. But so it did, as it turned out.

But after all the large, exquisite doll is not indispensable, and you will doubtless find children who never possess anything more wonderful than a small rag doll, or perhaps a small china one, and such modest possessions are apt to be just as well beloved as the more elaborate and costly ones. Even when broken and lacerated and discolored beyond all recognition, a doll is still a doll, and often the oldest and least attractive from our point of view is the favorite from the child's. Further evidence of the mothering instinct toward dolls is to be found in the fact that dolls tire, grow sick, require the physician's skill, feel hunger and thirst, cold and heat, and respond generally to varying stimuli just the same as does the possessor! As a result they must be put to bed regularly for naps, must be tenderly ministered unto, must be fed and given to drink, and must have their clothes properly regulated as to climate exactly as solicitously as their own mothers oversee their own welfare. Thus is the mother love in its incipency flooded freely upon the doll

Besides, dolls make good sympathetic companions, and many a child's heart is poured out into the unheeding ear of some ragged, unkempt doll with all the passion and the abandon of which an abused child is capable. Or again, the moody child scolds and punishes the doll for some untoward conduct, and perchance puts it to bed supperless and kissless until the morrow brings forgetfulness and forgiveness. Toilets are carefully made by the child-mother, from manicuring the nails of the "child" to walking out with it in the carriage in order that the fresh air and lively surroundings may refresh it. Sometimes, too, there is a death in the doll family, and then with all solemnity and sorrow the tiny corpse is laid in the ground amid all fitting ceremony and the dirt is piled high above the bier, with perhaps a handful of wild flowers added to heighten the effect and make it the more realistic.

This same maternal instinct, or the tendency to mother all smaller creatures, especially when they are in extremity, is to be observed in the ready sympathy which children feel for one another or for animals. For example, children are almost always interested in cats and dogs, and the usage which these long-suffering creatures often receive at their hands is far from gentle. Children like nothing else better than to fondle and cuddle and play with a cat, or a dog. Occasionally, too, the sight of a child crying is the stimulus which incites another child, perhaps a stranger, to falter shyly up to the unhappy one and offer a heart full of sympathy to her. The writer has known of more than one case in which this sort of thing has taken place, and wherein the sequel was the bursting into tears of the sympathizer and the spectacle of two children who had never seen each other before fast locked in one another's arms and crying as though both hearts would break! There is no impulse to behavior more noble and ennobling than this mothering instinct, fast embedded in the life of every child.

TOPICS FOR SPECIAL STUDY AND REPORT

1. Observe and report upon the mother instinct in some domestic animal or pet.
2. Note the interest which any chance group of people will manifest in a child.
3. Recall your own early experience with dolls. What is your present attitude toward them?
4. It has been often reported to the writer that the interest which children used to manifest in dolls is slowly waning, and that the modern child cares little for doll-play. If this is your observation, can you account for the change in attitude? Is the tendency away from dolls a beneficial one?

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LESSON 18

INSTINCTIVE BEHAVIOR OF CHILDREN (*continued*)

13. The Imitative Response

What to look for in the observation period:

1. Exactly what part, if any, conscious imitation plays in the lesson. If possible, determine in what subjects of study imitation is a more important means of learning than in others. In what lessons is it most important? Least important?
2. Any evidences of reflex imitation. Of social imitation.

The nature of imitation. There appear to be two distinct sorts of imitation, or rather two distinct kinds of forces which result in the imitative act. The first of these we may term *reflex imitation*, the second *acquired* or *complex imitation*. Only the first of these is instinctive in its nature, the second being the result of practice or of training. The former is natural, spontaneous, and innate; it is therefore uncontrollable: the latter comes about as the sequel to experience, and is therefore allied with habit, which is a learned rather than an unlearned form of behavior. In general, regardless of whether the imitative act be reflex or acquired, the term imitation may be defined as *the tendency of the organism to copy or reproduce the actions or behavior of others*. The response is universal among all human beings of normal evolution, and lies at the basis of much of their progress as well as of much of their stagnation. In the case of the simpler, reflex form of imitation, the response is naive, direct, and immediate; in the case of the complex, learned imitative acts, the response may be more artificial, less direct, and more subject to conscious control. Let us consider some of the more obvious imitative responses of adults and children, in order better to understand the difference between reflex and learned imitation.

Imitation in adults. Imitation in adult human beings is largely of the learned or acquired sort. If you will stop to ask yourself through what agencies you have learned to talk, write, play the piano, or study a lesson, you will no doubt be forced to the conclusion that the secret of your learning any art lay at least to a considerable degree in imitating some one else. True, this may not have been always conscious, but neither on the other hand was it reflex and involuntary. Fancy one's learning cleverness or skill in any performance because one cannot help but imitate reflexly! Consciously or unconsciously, however, we learn to govern behavior largely through imitation of our companions, or teachers, or friends. Ordinarily the motive behind imitative acts is either the satisfaction which will accrue to the organism after it has imitated, or else it is the social approval which will be vouchsafed as a result. Take for example the habits of courtesy and politeness or good form. We learn to pay homage to these established rules of conduct in order to escape the censure of society or, more positively, in order to win the "well done" of society. Such behavior as lifting the hat upon meeting a lady, or eating with the fork, or dressing modestly, or allowing precedence to age is acquired by the individual primarily in order that the onlooker — which means society — may approve. He who takes liberties with established custom receives justly the condemnation of his fellows, whether it be in the matter of his dress, or his table manners, or what not. Originality in the realm of custom and politeness, or in other words a failure to imitate recognized good form, rarely receives the commendation of society. And yet there is undoubtedly a danger in slavishly and continually imitating the established virtues of custom. The Chinese, for instance, because all education for them consisted until recently in glorification of the past ages and their civilization, remained for centuries a backward nation and a stagnant society. Can you think of other illustrations of imitation in adult life aside from the realm of custom?

Imitation in children. In earliest infancy the imitative responses are purely of the primary sort; that is, they are simple reflex copyings of the behavior which they observe in their nurses or their parents or other companions. A smile lingering upon the face of the observer is likely to be reflected almost at once in the face of the baby. In the same way, a frown may be the stimulus which will set the infant a-frowning; as may also any change in facial expression find imitated reproduction in the infant's face. Infants during the first months of life take great delight in watching people's faces, and whenever, as often happens, some one purposely purses up his lips, or winks his eyes, or frowns, or smiles, or twists his face into various shapes and angles in order to amuse and delight it, the infant responds by doing about the same things, with variations. It is difficult to determine in how far the baby may consciously try in a rudimentary way to imitate expressions of face in surrounding people; the probabilities are, however, as we said, that the tendency to imitate them is purely reflex and uncontrollable — at least for several months of life. The writer has recently had under observation the case of a three-year-old baby who habitually draws down the corners of its mouth and flattens out its nose, and has done so ever since its grandfather two years ago did that very thing with his own mouth and nose, to the hilarious approval of the child. From an original reflex imitation, the response has now developed into a habit which is very disagreeable and causes the parents no end of embarrassment, for the child is as likely to make up a face at a perfect stranger as at its own sister or brother.

It is probable, too, that the earliest attempt on the part of an infant to control his babbling and prattle in the interest of articulate language is largely a reflex imitation of the language of surrounding folks. But if so it is soon submerged in the more complex process of language development as an *acquired* form of behavior. Imitation, however, continues to play a highly important part in the evolution

of a child's speech, although it is no longer motivated by the immediate and reflex tendency.

It is apparent, then, that imitation as a pure instinct is a very limited term, applying only to those responses which are not learned by the child. Very shortly imitation becomes either conscious or purposeful, with a distinct end in view, i.e., satisfaction or approval. Take by way of illustration the writing process. If you have ever watched a child learning to write from a copy or over a copy you discovered that he was using a great deal of energy, and that perhaps his tongue and mouth were at work almost as hard as his fingers. This is a case of *voluntary imitation*, entered into with the more or less present idea of learning to write. Another illustration of voluntary imitation may be seen in the conscious effort of a child to build a tower of blocks like the one constructed by a playmate. So, too, constructing a toy from a pattern, or drawing a map from the geography, or imitating the whistle of a locomotive are all types of voluntary imitation.

There is scarcely an object which children see that they do not in some way consciously endeavor to imitate. For example, sight of an airship incites a boy to convert an umbrella into an air craft on a windy day; boats or trains are reproduced in a variety of ways, from paper representations to strings of chairs and vociferous whistlings and blowings off of steam from laughing mouths; a sling-shot of a new design is new for a day only; the next day every boy possesses one of his own manufacture. Even the gait of a cripple or deformed or aged person becomes the basis for imitation on the part of thoughtless children. Voice-trilling is a fine art among boys and girls, each one striving with all his might and main to reproduce the clear, not unmusical note in the best triller's product. Attitudes, postures, prejudices, likings and dislikings, sports, recreations, language barbarities (and niceties), ejaculatory expressions, — all find imitators in youths as in adults. Such imitated responses we may term the products of *spontaneous* or *social*

imitation, i.e., forms of imitation which while not voluntarily embraced come about as the inevitable result of the examples and influences and ways of thinking with which the child is surrounded.

Among the products of spontaneous imitation which come to have broad and lasting influence over the maturity as well as the childhood and youth of children should be mentioned religion, politics, and education. In the case of the first of these, religion, it is doubtless a matter of common observation to you that children invariably embrace the faith and belief and even the denomination of their parents. Rare indeed is it that a child is proselyted to another creed. So with politics. If the father be a Republican, the son is almost sure to be. Political affiliations are after all more the product of heredity and environment than they are of sound individual reasoning. Who of all the great mass of voters to-day could state the fundamental differences in belief which exist between the two great political parties of the United States? Or who of all the membership of churches could state why they affiliate as they do? But perhaps most interesting of all is the social imitation apparent in education. The son of a business man looks forward to a career in his father's business; a professional man's son often seeks a livelihood in the profession of his father, and perhaps his grandfather. More directly, the language of the family and the schoolroom is the language of the child; the habits of home and school become in like manner the habits of the child; the attitudes toward life or any specific problems or departments of life which youth assume are likely to be assumed as the direct heritage of the surroundings in which they grew up. Children tend to imitate the mannerisms and the language and the conduct of those whom they love; how significant therefore are the qualifications of the teacher who is to win their love and hence to modify their entire lives and mould them after her own!

Imitation in animals. While experiments performed with animals tend to show in certain cases slight evidences of

imitation in a rudimentary form, it is still doubtful whether imitation plays any significant part in their lives. You may have seen the chicks scurry to cover at the warning cry of the mother hen upon the approach of a hawk. In this activity one chick appears to imitate somewhat the behavior of the rest. It is doubtful, however, in how far there is any real imitative function operating, and in how far the response is purely to the instinct of self-preservation. It is very likely that the latter explanation is the correct one. At any rate, wherever there appears to be plausibility in assuming the presence of imitativeness in animals, such imitative tendency is always connected with actions in themselves instinctive.

In order to demonstrate the presence or absence of imitation as a significant factor in determining the behavior of animals, several hundreds of experiments have been made and reported by various investigators from time to time. It would be idle to attempt here to enter into a summary of any number of these. Perhaps the best known experiments are those performed by Thorndike and Yerkes and Lloyd Morgan. The first of these investigators, using cats as his subjects, found that they could get out of a puzzle-box no more quickly after watching a cat who knew how than they could before. In another experiment Thorndike demonstrated the inability of the monkey to open a box any more intelligently after seeing the experimenter open it than previously. Yerkes, working with dancing mice, concluded that imitation played no rôle in their behavior. In general, while a few investigators believe somewhat to the contrary, it appears that there is little if any evidence of any significant imitative capacity in the animal series. To be able to imitate seems to imply the existence in the mind of the actor of an *idea* of the result to be attained, — an existence which psychology is not yet ready to accept. It is true, however, that throughout the animal series there exist crude forms of instinctive imitation, which occur "when the sight or sound of one animal's performing a certain act

operates as a direct stimulus, apparently through an inborn nervous connection, to the performance of a similar act by another animal." The hen, for example, teaching her chicks to pick up food particles, pecks at them herself, takes them up into her own mouth and immediately drops them again, clucking encouragingly the while, in an endeavor to teach her brood to eat. Lloyd Morgan finds from his own experiments that instinctive actions, such as these, are performed earlier if imitation has been possible. About all we can say is, then, that an example decreases slightly the time in acquiring certain responses *which are in themselves instinctive in nature*. It is possible that imitation plays no vital part in the animal series.

TOPICS FOR SPECIAL STUDY AND REPORT

1. Make a list of all the activities you know of which depend to a considerable extent upon the imitating of an example or copy.
2. Observe a young child for ten minutes, paying special attention to any imitated behavior in evidence.
3. What is meant by a "puzzle-box" and how is it used? Report upon at least one experiment in which it was employed.

THE LESSON APPLIED

1. What are some qualities in a teacher which boys and girls may safely imitate?
2. Is there danger that children who are encouraged to imitate, in composition, style, etc., for example, may lose their own originality? Is it possible for one who has never imitated to be original?
3. Is imitation as a prime motive a valuable process? For example, is there any real educational value in a child's impersonating Hiawatha, or Miles Standish? Or of a sixth-grade class presenting in tableaux *The First Thanksgiving*, or *Lincoln Freeing the Slaves*? Or of depicting in pageantry the story of some mythical or historical event?

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LESSON 19

THE EMOTIONAL SIDE OF BEHAVIOR

1. Emotions and Instincts

What to look for in the observation period:

1. Evidences of feeling or emotion in the children.
2. Incidents during the class period in which either marked satisfaction or marked dissatisfaction is apparent on the part of any of the pupils.
3. Whether such factors as temperature of the room, attitude of the teacher, smooth or unsteady progress of the lesson, etc., have any bearing upon the affective side of pupils' behavior.

The relationship of emotions to instincts. We have now completed our survey of the more important instincts of children, and in this lesson we turn our attention to a discussion of the *feeling* side of behavior. We have seen in earlier lessons that the nervous system of the child at birth has somewhere impressed upon it connection tendencies which impel action whenever the appropriate stimuli are presented. Sight of other children at play, for example, arouses the *play* response in any child; the onset of the hunting instinct leads the boy to indulge in *hunting* responses; the presence in the environment of small interesting objects compel the child of seven or eight to *collect*; and so with all the other forms of instinctive behavior: given the stimulus, the inborn tendency to respond in a more or less definite way operates and the child responds. Now you will recall that a part of our definition of instinct formulated in the fifth lesson (*q.v.*) pointed to an emotional accompaniment of instinctive activity. We said not only that an instinct is an inborn tendency to respond to definite stimuli in a definite way which is more or less common to all members of the species, but also that there was *usually connected with the response some form of emotional supplement*. Up to this

point we have concerned ourselves merely with interpreting the first part of the definition, i.e., that tendency to respond to play stimuli, and migratory stimuli, and ownership stimuli by playing and by migrating and by owning. In this and the two following lessons we are to be concerned with the final aspect of our definition, the emotional phase of instinct.

If you will observe either a single child or a group of children who are engaged in some form of activity—it matters little what, because children do little that is not almost purely the prompting of some instinct—you will be struck with the fact that they are either enjoying or are not enjoying the activity in which they are engaged. Most likely they will be enjoying it, rather than the opposite. If you could discover no other clue to their states of mind, the shouting and the shrieking and the laughter should be sufficient to indicate it to you. In other words, regardless of whether they are positively happy or unhappy at their play, their behavior informs you that there is a feeling side to their responses which extends beyond the mere physical running and collecting and throwing. There is a satisfaction in the free expression of their inner promptings or a dissatisfaction when those promptings find repression or thwarting in their expression.

Herein lies the very heart of the emotional side of life. Our feeling tone may be said to range from the purest pleasure on the one hand, through an apparently neutral zone to the most abject pain on the other. In reality, however, there is probably no absolutely neutral zone of feeling; hence all our emotional experiences are divisible into two categories: those which are satisfying and those which are the reverse of satisfying—disagreeable or annoying. When we are in the former state of mind our instinctive or acquired interests are finding satisfactory and appropriate expression; when we are in the latter state, they are finding repression or thwarting. Contrast, for example, the emotional state of the boy who is stealing exultingly upon

an unsuspecting comrade with the intention of shouting with all his might suddenly behind his shoulder, and the emotional state of the same boy who is interrupted at the most dazzling moment when he is opening his mouth to shout by the sound of his mother's seventh warning to hurry up and do his errand at the store! Or again, contrast the mental states of the girl reading the last chapter of *Little Women*, and of the same girl peremptorily summoned from her reading to pare potatoes for the soup! Interest, in other words, abides in the satisfying behavior, and when interest ceases altogether there ensues a feeling of *ennui* which is the reverse of satisfying. It matters little what the nature of the work is in which we are engaged: the emotional supplement of our behavior will inevitably be some degree of pleasure or some degree of displeasure, depending upon the presence or absence of interest, either immediate or remote.

The earliest emotions. We have already seen that the child in the cradle smiles and gurgles when it is comfortable, and frets and perhaps cries when it is uncomfortable. Perhaps we could find no better classification of emotions than this: the comfort or discomfort attending our work or our play. In the very earliest weeks of life the satisfaction or comfort of the baby is conditioned almost *in toto* upon the readiness with which all its immediate physical needs are ministered to. When it has been fed properly, there are evidences of satisfiedness; when its clothing is neither too thin nor too plentiful, there are similar evidences of satisfaction; when the temperature of the nursery is well regulated, the infant is likewise comfortable. Indeed it is probable that the earliest pleasures which the child experiences are after all merely the absence of pain, or in other words vague, inarticulate feelings of content and well-being. But very shortly the infant begins to react toward his surroundings in a more positive way. There are the bright colors in the carpet which are to be studied in fascination; there are the patches of sunlight upon the floor which chal-

lenge inquiry; there are the toys and picture books to be manipulated and their secrets investigated; there are the flowers in the vase and the designs in the wall paper to be wonderingly traced. And in all of these diverse undertakings there is manifested varying degrees of satisfaction and dissatisfaction, from the delighted smiles which light up the infant's face when its roving eyes are caught by the glitter of the bright toy or the colored picture to the scowls and cries of disapproval when toy or picture book is peremptorily taken away from it. As the child grows into its second year there become apparent in its behavior these and other emotional reactions accompanying its various activities. The more selfish or individualistic emotions, like fear, anger, joy, sorrow, jealousy and envy make their appearance before the more altruistic and social responses: sympathy and love.

Pavor nocturnus. One of the most interesting illustrations of the earlier emotional responses of the child is to be found in the so-called "night fear" — *pavor nocturnus* — often observable in very young children. The child startles the household in the small hours of the night by emitting a piercing scream, perhaps followed by a series of them. To the anxious nurse who hurries to the bedside the child presents a spectacle of frozen horror as its eyes stare fixedly into the corner of the room. Even after it is awakened it continues to tremble and perhaps moan and cry for several minutes before it can be calmed and put back to sleep. It is probable that the cause of this strange affection lies in disagreeable dreams which the child is having, induced no doubt by stories of wild animals or "bogy men" to which it has listened during the day. Whatever be the explanation, however, the nature of the emotion is unmistakable.

Jealousy. We referred in a former lesson to jealousy, or envy, as a common emotion of childhood. In general it may be said that this emotion is aroused when one's pleasures or rights, either real or fancied, are usurped by others. In the very young child symptoms of it are first seen in connec-

tion with the attitude of the parent toward another child either of the same family or of another. If undue or unnecessary attention is paid to the other child, or especially if any protestations of endearment are vouchsafed to it, jealousy becomes at once apparent in the scowling face and perhaps the angry cry of the child thus cheated of his imagined rights. Another situation in which jealousy comes to the fore in child life is found in the envy of one child manifested toward a more fortunate one who possesses a new pair of skates, or a new sled, or a better cart, or a newer pair of shoes, or a bicycle, or a velocipede. Incidentally, we adults are by no means free from this vice, although through long years of denial and the cultivation of control and politeness we are usually more successful in covering up our envy of others than is the more naïve and transparent child. In it, desire goes logically and inevitably over into jealousy. But not only are possessions the object of envy; skills and abilities are likewise often the causes of jealousy on the part of a child more meagerly endowed or less practiced. Consider, for example, the envy in which are held the child who can pitch the straightest and speediest ball, and the child who can learn his piece the most quickly, and the child who can climb the tree or flag pole the fastest, or swim the stream most easily. It is fortunate that the pangs of jealousy in the simple-hearted child are usually merged in the admiration which he genuinely feels for even his superior in skill or in possessions. Were it not so, unhappy indeed would be the lot of most children, enviers as well as envied. Still, childhood's mask of repression is so thin and transparent that the vital forces regulating behavior can never be entirely concealed.

Joy and sorrow. Childhood is happily rather a time of joy than a time of sorrow. The instincts, clamoring for expression, usually find little check in young people, and hence a feeling state of satisfaction or pleasurable-ness is more predominant in them than is one of unpleasantness. It is true that in the past history of the race this condition

of childhood has not always obtained; nor does it to-day among all peoples. But in most modern civilized communities children are able to extract more happiness than unhappiness from life. Witness, for example, the exquisite joy of baseball, or of tag, or of hunting, or migrating, or of tunneling in the snow, or of sailing one's tiny boat on the pond, or of camping in the forest. There is little repression in all this; rather it is expression to the uttermost, and there is even a transcendent joy in the tired muscles and aching shoulders resulting. Even in fighting there is a sort of exaltation which is akin to joy in one's strength and pride in one's skill in defense or offense.

Still, there are times of despondency and unrest and uncertainty and even despair in the happiest childhood. The death of a pet dog, or cat, or rabbit, is likely to initiate a period of exquisite pain in the saddened young owner. Or again, the early days of school life, coming as they do after six or seven years of happy existence in which one was in large measure one's own master, not infrequently are days of pining for the free and unhampered life of the out-of-doors where the call of nature and of play is deliciously insistent. It may be that you can recall some glad, free day in your own early school life when you fled from the repression and constraint of the schoolroom out into the woods or the fields, but so planned your self-enacted holiday that the usual four o'clock hour found you trudging circumspectly home! Such is the nature of children! And then, too, consider the disappointment of young people when the long-awaited picnic morning dawns over a gloomy earth and above a raining sky; or when one's dearest chum is required to stay at home to help his father on the day above all others when a fishing trip to the adjacent stream had been planned. It is not necessary to multiply incidents of the encroachment of sorrow of a more or less poignant nature upon the otherwise joyous life of childhood. Look back into your own youth and you will doubtless find many a day which was made dark and dreary within by some repression or limitation

which interposed between what desire willed and what authority or incipient judgment decreed.

TOPICS FOR SPECIAL STUDY AND REPORT

1. Look up and report upon as many theories of emotion as you can find references to.
2. Observe an infant for half an hour, paying special attention to the *feeling* side of his behavior. In what ways were his apparent emotions related to instincts operating at the time?
3. Think back into your early childhood and try to recall the happiest and the unhappiest days which you ever lived through. Introspect and endeavor to determine why certain experiences were far more tinged with happiness or with sorrow than were others.

THE LESSON APPLIED

1. What would be some situations in the schoolroom which might favor the outcropping of the jealousy response? Through what indiscretions might the teacher herself be the innocent cause of such response? What faulty methods of teaching might bring it to pass?
2. Should a teacher strive always to make school work so interesting to the children that they are perforce always happy? Is there any pedagogic virtue in chronic dissatisfaction and unhappiness on the part of the pupil? Where such chronic disaffection exists, is it necessarily the fault of the teacher?
3. Does the socialized school, as you know it, tend to keep children interested and happy in their work? Does it also relieve the teacher somewhat?

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LESSON 20

THE EMOTIONAL SIDE OF BEHAVIOR (*continued*)

2. Fear and Anger

The four great human emotions. Perhaps the greatest of all our emotional responses are *fear*, *anger*, *love*, and *sympathy*. The first two of these, fear and anger, are likely to be selfish or individual in their reference; the last two tend toward the altruistic.

Fear. If you endeavor to think back into your earliest childhood you will undoubtedly recall a great number of situations which invariably aroused within you the fear response. Indeed, few children grow up to adulthood without having been at some time or other afraid of something or somebody. One of the commonest sources of fear in children, as you may remember from your own childhood, appears to be darkness. There is something awesome and uncanny in a dark room where shadows play uncertainly about in the gloom, and where every chair and every table seems strangely endowed with corporeal existence. The same holds true of the out-of-doors at midnight, as poor Ichabod Crane discovered to his despair on that memorable evening spent at the home of the fair Katrina van Tassel. Under the magic spell of darkness and night the imagination is likely to endow every stone and every tree, and even every corner of one's room with life and movability. Even the changing shadows seem almost to breathe at times, and the innocent furniture undergoes the most fantastic transformations under the lugubrious touch of night. No doubt you can still recall your childish dread to leave the cheery living-room in the early evening when bedtime came, and to mount the creaking stairs to the silent room above. This was particularly true if you lived in the country where there was no friendly electric light to be switched on at the bottom of

the stairs. Or it may be that you can recall the trepidation with which you used to pass the cemetery at nightfall, as though the spirits of the departed might accost you and require placating at your hands. Parents are very often guilty of increasing this natural, instinctive dread of the dark which exists in all of us by locking their ill-behaved children in dark closets or lonely rooms as punishment for some misdeed committed. Besides, they do not hesitate to threaten them on occasion that the goblins, or the "bogy man," or some other spirits of the darkness and night will carry them off if they fail to conduct themselves discreetly. Thus in one way or another the dark is made to hold added terrors to the credulous mind of the child. Ghost stories told during the day may linger in the unconscious memories at nighttime and multiply this fear of darkness a hundred fold.

Thunder storms, too, are very often sources of dread to children who are led to imitate reflexly the nervousness of their elders. Consequently even mild storms may subsequently and habitually arouse in them the most exquisite fear and the most unhappy foreboding, which are never conquered and which may actually come to color the whole of their mental lives. On the other hand, children growing up among older people who show no agitation during thunder storms may go through life without ever being really afraid of this remarkable phenomenon of nature. It is not our purpose here to extend the list of situations in the face of which fear is likely to be aroused. Suffice it to repeat, as we have already said, that nearly all children are more or less fearful of something or somebody at some time or other, in their early years. They may, and often do, outgrow one fear, only to fall victim to another. In the case of timid children, or those of a nervous diathesis, life may become at times utterly miserable owing to the number and persistence of their fears.

Phobias. Often a fear comes to be chronic, or morbid, in which event it is known as a *phobia*. Usually the roots of

these morbid fears are to be found far back in the early years of one's life, and closely associated with unfortunate, or unhappy, or tragic experiences at that time encountered. For example, a morbid fear of fire (*pyrophobia*) persisting into and through adult life may have been caused originally by an experience with fire which can never afterward be effaced from the nervous system. Being in a burning building, for instance, or being set on fire by lighted matches while playing with them, or hearing the screams of animals perishing in the flames, may become in the mind of the nervously constituted child a rankling wound, as it were, which never heals and which remains always a source of much mental suffering. Other phobias besides the fire phobia include morbid fears of death, of dead bodies, of animals, even cats and dogs, of crowds or of solitude, of high places or enclosed places or open places, — all of which, together with scores of other fears, are to be met with in certain individuals. Dr. Hall has been able to tabulate several hundred distinct fears found in human beings in more or less morbid form.

Adult fears. Fear in adults, and to some extent in children too, has both a negative and a positive aspect. In the case of abnormal fears such as the phobias, or of temporary normal fears, such as fear of snakes, mice, sudden noises, etc., fear may be said to be negative. The negative side of the simpler sorts of fear is after all, however, of very slight consequence to individuals. Ordinarily those common fears to which we are all subject on occasion arise suddenly when we encounter an impending and threatening stimulus, only to disappear as suddenly with the removal or explanation of the stimulus. The fear, for example, which nearly overpowers you in the depths of the night, when you are awakened from deep sleep by a mysterious noise in the house, is quite dispelled when you discover in fear and trembling that the source of the disturbance was merely a mouse in the wall or a stair creaking in the contracting cold. These negative, chance fears are peculiar to us all and are forgotten

the next minute. There are, however, a great many aspects of our behavior in which the attendant and underlying fear response, though mild and passive often, is yet permanent and fixed throughout life, exerting always a salutary influence over us. Such fear we may call positive in nature. Among fears of this sort may be mentioned the fear of disgrace which keeps us honest and honorable; the fear of the law which keeps us obedient and law-abiding; the fear of failure which keeps us always employed to the uttermost in our vocations; and the fear of social disapproval or censure which keeps our social consciousness always keen and alert. In addition to these there are a considerable number of religious fears and sex fears which play important and positive parts in the lives of all normal adult individuals.

Anger. If you have ever observed very closely the behavior of two boys engaged in a controversy you have marked the flaming face and the blazing eye and the flushed cheek and the clenched fist and the quick breathing which were the physical expressions of their anger state. It may have occurred to you that here was an inexhaustible fountain of energy which was running to waste with every blow delivered and with every breath drawn. In the infant the earliest symptoms of this emotion of anger usually appear with delay in the forthcoming of food or in the ministering to other physical wants besides hunger. In the very young child the outward manifestations of the anger state include the spasmodic crying, the convulsive opening and closing of the hands, the clutching of the clothing, the kicking of the feet, and the rocking of the body from side to side. In later infancy and in childhood the anger state is likely to appear whenever an instinctive tendency has been repressed or thwarted, such for example as the removal of a toy or other desired object, or the inhibiting of privileges ordinarily enjoyed. The failure of any physical activity to find its desired or customary outlet tends to arouse the fighting instinct, and with it its natural correlate, the anger response. You have probably witnessed the operation of it in the behavior of the boy com-

pelled to remain at home and hoe potatoes the while his comrades hie them away to the trout stream or the woods; or in the girl whose motives or actions have been quite misjudged by her fellows; or in children generally who are cheated, or laughed at, or made sport of, or wronged, or teased, or misjudged in any way. In the older child, however, the expression ordinarily given to the anger state is more direct and purposeful than is true of the younger. The latter cries bitterly, strikes out blindly; the former restrains his tears and strikes more advisedly. He deems it cowardly to show signs of weeping; the manly thing is to strike and strike true. In the case of the girls it is similarly necessary to repress the tears, but instead of resorting so invariably to fisticuffs they more usually seek relief and satisfaction from their pent-up emotions by uttering bitter words, or by "cutting" the offender, or by going out of their way to do unkind things. Often, it is true, the bitter words and unkind acts are repented of immediately they have been said or done, it may be in sackcloth and ashes, and it is ordinarily true that children rarely let the sun go down on their wrath. Such is childish anger.

In adults, the anger state seeks expression in a multitude of ways, even as it is called forth by a multitude of situations. If you will endeavor to introspect a bit you will doubtless be able to make a somewhat extended list of all the situations which arouse anger within you. It may be the witnessing of some one beating a horse; or it may be the receipt of injustice on your part; or it may be the discovery of deceit and trickery and cheating in any department of life; or it may be the slanderous word spoken of another, or the thoughtless opinion expressed unadvisedly; or it may be the witnessing of any of the multifarious and innumerable petty meannesses which we encounter from day to day in our association with neighbors, or clerks, or business men, or officials, or legislators, *et al.* In general, anything which is antagonistic to our sense of justice may become the stimulus to wrath and indignation. Constructively, such anger

states as are called forth by noble aspirations are invaluable to the ultimate salvation of the world for justice and truth and fair play. Without such reservoirs of energy and such stimuli to righteous conquest and the conquest of righteousness society would lack one of its greatest driving forces, for it is one of nature's most happy provisions that the anger state may be sublimated above the gross physical combativeness and become the incentive in all of us for the overcoming of all injustice and the conquering of all social evil in a world wherein there is still ample place for such righteous endeavor.

TOPICS FOR SPECIAL STUDY AND REPORT

1. Report upon any observations of fear response in children.
2. Recall from your own childhood all situations or objects which inspired fear within you. What is your present attitude toward these same stimuli?
3. Do you know of any case of morbid fear, or phobia, in any of your acquaintances? If so, can you account for its origin?
4. Make a list of all the stimuli which arouse in you the anger state.
5. Report upon any observations which you may chance to be able to make of the operation of anger in children.

THE LESSON APPLIED

1. Is the motive of fear ordinarily a desirable one to which a teacher may appeal? How has the attitude of educators changed in this respect in recent years?
2. In how far is it possible for the influence of the schoolroom to be exerted toward directing the fear and anger energies of children away from the more crassly physical and toward the higher social or moral or intellectual?
3. Dr. Hall says: "We fear God better for having feared thunder." Can you justify this belief and its implications?
4. Are schoolyard fights ever justifiable? If so, under what conditions? Do they ever offer opportunity to the teacher for salutary instruction?

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LESSON 21

THE EMOTIONAL SIDE OF BEHAVIOR (*continued*)

3. Love and Sympathy

What to look for in the observation period:

1. Whether the children seem to be sympathetic and considerate in their attitude toward any deformed or defective child in the classroom. What part do age and previous training play in determining the behavior of children toward unfortunates?
2. Whether the children are keen at appreciating a humorous situation which may chance to arise.
3. Evidences of the æsthetic appreciation of older as compared with younger children.

Love. You have without doubt chanced to witness the interesting spectacle of a watching face pressed closely against the pane, its eyes turned anxiously and expectantly up the street in the direction whence a mother should come. It was the face of a child overcast with impatience at the delay of the returning mother, and yet lighted up with love for the absent and tardy one. If you watched this little tragedy long enough you were probably rewarded in due time by beholding the mother coming hurriedly down the street, and by the instantaneous transformation which her coming wrought in the eager face. From being impatient and perhaps cross, it was miraculously cleared and the light of a great joy suffused it. Tear traces were dashed away, and two flying feet and wide-spread arms sped down the walk to find solace and comfort in the arms that never failed. Such is the power of love. Other women might have passed and re-passed the window all the afternoon, and yet none could satisfy save the one.

In its earliest manifestations, it is true, the germinating love response of the infant is largely overclouded by the purely physical needs of the body. A mamma is to make

one comfortable, and that only. A mamma is the person who feeds one, lulls one to sleep, keeps one's clothing comfortable, gives one drink, etc. The baby's love for the mother is not dissociated from the general satisfaction which he experiences from her tender and dependable ministrations. He is lonely when the mother is absent, impatient at her delay in hastening to relieve him, happy when she is present and looking fondly and compassionately down upon him. Nothing else matters to the very young child. But as he grows older and learns to run about by himself the close relationship between the mother's care and the mother's indispensableness no longer exists; one is able to a considerable degree to care for one's self. But now dawns the love genesis in the child's heart. From being a slave to his physical wants, the mother now suddenly becomes an indispensable companion and lover, a source not only of solicitude and sympathy over one's childish troubles but a sharer of one's joys and confidences as well. It is this stage in the development of the love response which we had in mind above when we referred to the childish face pressed against the pane.

And yet how soon the stage comes during which even the mother no longer satisfies; happiness and sympathy are sought now in the bosom of the group or gang, and the advances and protestations of the mother may be apparently disliked and purposely avoided. This is especially likely to be true when such manifestations of affection are offered in the presence of one's boyish chums. Not that the love for the mother is any less; rather the world of experience is opening before the child so rapidly and deliciously that he is unable to sift out one value from another, and in the shuffle which he does endeavor to make the love for the mother, as being such an obvious asset, is likely to sink temporarily into the background. This stage does not, however, continue very long. Sooner or later all the earlier passion for the mother love floods back into the life of the child of the world of experience, and once again the world for him turns concentric about the mother. Indeed, it did so turn all

the time, in spite of the boy's growing interest in others. Throughout his whole life this love and veneration for the mother remains one of the strongest emotions of his being, and one of the surest guides of his conduct in all situations. Recall, if you will, your own early attitude toward your mother; introspect into your present attitude; project your present attitude into the future, and then see if that love which you bear her or her memory must not inevitably be ever green and fragrant.

Sympathy. Out of this early association with the mother grows the emotion of *sympathy*. Kirkpatrick calls the child the most sympathetic of all creatures, and offers as an explanation of this seeming paradox the fact that children are unable in their earliest years to differentiate between animate and inanimate objects, and consequently tend to interpret the whole of nature and the whole inanimate world as a part of themselves, hence to be sympathetically acted toward. You have certainly noted this strange attitude in children playing about the yard. A broken flower may become the stimulus which incites the four-year-old to pour out his sympathies upon its unhappy state and perhaps bind it up. In a similar way and from a like motive you will occasionally find children patting the floor or the walk as though it had been injured, and muttering words of pity at its state. Trees and stones share likewise in this animistic belief of young children, as do also sticks and toys and other small objects in the environment. This is surely a very charming cult in childhood, although its duration is all too brief. Soon the child learns to isolate his own body and feelings from the surrounding medium, and henceforth he is no longer an infant but a child. Individualism and selfishness creep in as rapidly as the earlier animistic sympathy begins to wane. Is the animistic sympathy itself selfish in nature?

And yet if you have ever observed boys engaged in such amusing and absorbing pastimes as pulling out the wings from the bodies of flies, or robbing birds' nests, or killing

squirrels, or tying cats' tails together, or enclosing their heads in paper bags, or intent upon some other form of juvenile barbarism, you will perhaps be inclined to question the natural sympathy of children. How prevalent does cruelty appear to be among young children! You have seen them bantering a feeble-minded child, and plaguing and teasing younger children, and calling their mates by nicknames which are altogether too suggestive and which may even make the appellants cringe under them, and breaking or stealing or hiding toys of others, and in other ways behaving more like cruel savages than sympathetic humans. Values appear to be in terms of what enjoyment or satisfaction or privilege one can get out of others, rather than what degree of helpfulness one can impart to the lives of those about him.

All this is true. Older children are cruel, and selfish, and indifferent, and thoughtless, and hard. But the explanation lies not in any *innate* tendency toward cruelty. The boy does not pull out the wings of the fly for the purpose of making the fly suffer. He is actuated by another motive, namely: the desire to see what the fly will be able to do under such limitations. Curiosity prompts his act. Nor does the boy rob a bird's nest just to behold the anguish of the mother and the father birds; nor push the cat's head into a paper bag for the purpose of gloating over the animal's suffering. The explanation of his seeming brutality lies rather in his curiosity and his delight at beholding well-known animals do unaccustomed things. The whole animate world, from the lowliest fly to the hunchback or the idiot, is for him a sort of complex jumping-jack, as it were, which he delights in manipulating at pleasure. Once, however, his experience has been broad enough to enable him to appreciate the feelings of his victims, or once his imagination has been sufficiently appealed to to arouse his dormant sympathies for them, then the cruelty appears less and less and thoughtfulness takes its place. During the early years of life his sympathies are very obviously limited because of the lack of these two vital forces in his conduct — experience

and imaginativeness. The former is to be acquired only with time; the latter in consequence of wise instruction on the part of his elders. Lacking these two things the child remains an incorrigible savage in so far as his attitude toward other animate creatures of lesser stature are concerned. Now you can understand why it is that children are unable to appreciate death or sorrow or misfortune of adults: they have neither the experience nor the imagination to make it possible for them to put themselves in the places of the bereaved or the injured or the wronged. Sympathy is thus an emotion dependent upon time and relative maturity.

Two other lesser emotions: the æsthetic and the humorous. It is said of the Swiss mothers that shortly after the birth of their babes they hang a variegated cloth over the foot of the cradle in order that the wandering eyes of the infant may be attracted to the bright object. Pestalozzi tells us that the child lies for hours at a time in delighted contemplation of the cloth blowing in the breeze. You have frequently remarked the interest in bright colors which most children manifest; even their toys are bright in the reds and purples and greens. Pictures delight their eyes and compel their imagination. Not the pictures of beautiful landscapes and temples and saints, but rather pictures of dogs and cats and animals in general and children like themselves — these are the favorites. Real critical appreciation of art comes long years after. If you will study the drawings made spontaneously by young children you will find that their chief interests lie in trains and boats and people and animals with which and whom they are familiar and at home. In the realm of music, too, the æsthetic appreciations of children are far from those of connoisseurs. The discords produced from a long-suffering piano, or drawn from a nondescript harmonica, or a jew's-harp, or even from an inverted dishpan are infinitely more satisfying to them than the performance of a virtuoso. Their oral attempts, too, leave much to be desired in their voices and appreciations before they can become true artists. In like manner the

stories which they revel in are not those built skillfully and logically about a noble theme, as is the case of real art, but rather they are often the most illogical, and the least skillful, and the farthest removed from artistic in their execution.

And yet some day out of all these barbarities of drawing and these discordances of music and these grossnesses of judgment will develop the æsthetic emotions of the next generation. Gradually the eye will be trained to judge and the ear to interpret and the hand to fashion and the senses to discriminate.

Of the humorous emotions we need pause to say but little. It is so obvious to all of us that childhood is the age *par excellence* of humor and laughter that the fact requires no discussion. Wild, uncontrollable, and boisterous, the humorous side of child behavior sweeps us all along with its very contagiousness until we are ourselves young again. And even the sage and the philosopher are constrained to play "peek-a-boo" with the little child.

TOPICS FOR SPECIAL STUDY AND REPORT

1. Observe an infant for several minutes while the mother is engaged about the room. Do you detect any evidence of the genesis of the love response?
2. Report upon any cases of cruelty either to other children or to birds or animals which you find boys engaging in. Can you determine the motives behind the response?
3. Make a collection of the spontaneous drawings of a five-year-old during an afternoon. It will be necessary of course to see to it that pencil and paper are among the available articles near him.
4. Report upon any instances of the humor response in children which may come under your notice.

THE LESSON APPLIED

1. In how far does hero-worship in boys and girls develop out of a sympathetic understanding of the life and deeds of their heroes? Is every child at some time or other likely to be a hero worshiper? Should it be a function of the school to encourage such worship?
2. What is the value of the somewhat recent inclusion in the curriculum of bird walks, nature readers, etc., and of the organization in connection with the work of the schools of bird clubs, animal protective

leagues and other agencies that tend to arouse children's interest in animals? Some of the more progressive schools often have small animals in captivity in the schoolroom for considerable periods for observation purposes. Has this any advantages or disadvantages? Dr. Hall has said that a series of small but entertainingly written and well illustrated books, each one dealing with the life and ways of some interesting animal, would be of very considerable value in every schoolroom. In what ways do you think this would be advantageous?

3. What subjects of study, besides nature, are specially fraught with possibilities in the teaching of human sympathy to boys and girls, and particularly to the former? Should you say that sympathy is something that may be taught directly, like multiplication, or indirectly, like truthfulness?
4. Is the period of childhood, previous, say, to the fourteenth or fifteenth years, a time for emphasizing the technique or the appreciation of art? Why?
5. Is there any lasting, though indirect, influence exerted upon the aesthetic side of children's natures by the interior decorations of schoolrooms and the arrangement and care of exteriors? Explain.

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LESSON 22

HEREDITY

I. General Lesson

The problem stated. We turn now from a consideration of the instinctive endowments of the race to a discussion of the general subject of heredity. In a sense all of the instincts and their accompanying emotions are a heritage from the past life of the race. They are, however, the echoes of a far distant past, so far indeed that the responses which they engender in the individual are sunk in the experiences of the endless number of individuals which have preceded him. They are stamped indelibly upon the nervous system because natural selection has operated in past ages to preserve such individuals as possessed them. In the case of heredity, however, we are dealing with a more specific and less remote endowment. Heredity in the strict sense concerns itself primarily with the influence of family, sex or race. Its problems include the influence exerted by parents and grandparents upon the present individual; they include the probabilities of inheriting certain given physical or mental qualities from near ancestry; they include the relative weight of nature and nurture, or heredity and environment, in the development of the individual; they include the influence exerted over one by sex or race. They involve questions of training, education, marriage, and every other social relationship. If we could determine all the forces of heredity and predict their appearance and strength in every child, a large part of our educational process would be simplified and we should be working far more intelligently and to wiser purpose than we are at present able to do. Unfortunately, however, our knowledge of this important side of life which is born in people is not so dependable as we might wish.

Commonly observed facts of heredity. Still, there are

certain facts about inheritance of traits and capacities which are generally accepted by all of us, for the very satisfying reason that we have observed them ourselves to be true. You are familiar with the old saying, for example, that a child whose characteristics or abilities are like his father's is "a chip off the old block." You have also heard such expressions as "like father, like son"; "it runs in the family"; the child is "the very image of his mother"; etc., and have experienced the truth in a general way of such popular axioms. Often you have noted the similarity of the features of a child with those of one of his parents. You have been struck, too, with the color of eyes and the shape of nose, or the color and texture of hair, or the general stature of children in whose parents the same traits were observable. It is probable also that you know of more than one family, possibly you yourself belong to such, in which the boast is commonly made that everybody in it has always lived to a good old age, and the ninety years of the maternal grandfather or the ninety-five of the paternal grandmother, or the venerable hundred of a famed great-grandparent are commonly cited in defense of the claim. Left-handedness appears to be another characteristic which recurs in families, although it is not improbable that early imitation of the left-handed mother may be a factor in determining the handedness of the child. It is likely, however, that the recurrence is dependent upon certain modifications in the nerve structures which cause left-handedness to be really inherited in the family sense, in contradistinction to the usual racial heredity of right-handedness. It is a matter of common observation also that the children of one or both deaf parents are frequently, though not always, deaf; and that often the descendants of parents who have ocular irregularities or defects are similarly handicapped.

When we come to an analysis of mental and moral characteristics, however, we are less sure of our ground. True, you have commonly observed that certain mental endowments, such as moodiness, and quick temper, and sluggish-

ness of thinking, and will-power, and industriousness, and interests, and their opposites, appear to be handed down from parent to child much as physical stature and color of eyes are inherited. In like manner, artistic abilities are frequently observed to be transmitted through several generations. In general, parents who are musical, or artistic or mathematically minded, or skilled in mechanics, are likely to perpetuate like skills or capacities in their children, — always with generous exceptions. In general, too, persons of unimpeachable moral character ordinarily have much to thank their parentage for, although it is obvious that training and nurture play such large parts here that it is impossible to ascribe to heredity any constant and invariable responsibility in the matter.

Perhaps if we look at mental and moral endowments from the negative side it will help us to form a more general estimate of the part played by heredity. If you chance to know a family in which the parents are idle and shiftless and perhaps of questionable character, it is probable that the children in that family tend more or less exactly to be counterparts of their parents. Again, if you are acquainted with a family of weak-minded people who manage to drift along with the world without ever getting into any great difficulties with the law, and without ever being an appreciable influence for anything positive in the community, it is more than likely that the children in that home are indeed and in truth “chips off the old blocks.” Or again, if you chance to know of a family of people who are commonly reputed in the community to be feeble-minded, invariably many of the children in that family will be likewise idiotic. Thus, when we look at the extremes of human beings we can see the high spots in heredity, which are no longer so traceable when we turn to study the great mass of normal, everyday human beings who differ after all less than they resemble one another and in whom the force of heredity can only with the greatest difficulty be differentiated from the forces of environment. Even in the case of the idle and shiftless family, cited above,

one could not say advisedly, without careful study of the case, in how far the shiftlessness observable in the children is inherited from the father and mother, and in how far it is the result of their being brought up in an environment wherein they have never been taught to assert themselves aggressively and to take a positive outlook upon life and its possibilities. It is only in the case of the extreme variants from the normal, i.e., the positively idiotic or imbecilic, that we can say with greater assurance: thus much is due to heredity, and thus much to environment.

Are diseases inherited? You doubtless know of cases where the children of a tuberculous mother or father "went into consumption," as the saying goes. Or you have heard the neighbors say: "Tuberculosis runs in the family; John is doomed," or make predictions to that effect. As a matter of fact the heritability of specific disease is almost wholly denied in the light of modern scientific medicine. The explanation of the instance which is perhaps even now crowding into your mind wherein a child of tubercular parentage is already in the grip of the Great White Plague lies rather in the close association of that child with his infected parent than in any inheritance of disease from him. Children are very susceptible to disease, and their resistance power is extremely low in the early years of life. Let a child be associated with a tuberculous mother or father in the closeness of filial association during the first years of its life, and it is almost certain to *acquire* or *take* the disease from the parent, or from any other member of the family who chances to be infected with it. Barring a few eye infections and ocular weaknesses and certain nervous predispositions, which are not, properly speaking, diseases at all, it is probable that disease is rarely if ever transmitted through the germ plasm from parent to child. This does not, of course, contradict the often observed fact that children whose parents suffer chronically from tuberculosis or other disease are more likely to fall themselves victim to that disease than are children in whose heredity there is

no such tendency. This is due to the constitutional weakness which predisposes the infant to tendencies to the specific disease, and reduces appreciably in it the naturally low resistance power common to all children. Thus, about all we can say in defense of the popular superstition that disease runs in families is that the tendency to take a family disease is heightened by the weakly constitution of a child of sickly parents. Beyond this there is little truth in the contention, and absolutely none in the superstition that specific disease is inherited. The germ plasm is continuous and immortal, and absolutely isolated from any possibility of infection directly with zymotic disease.

All this would seem to imply that if we can properly safeguard the weakly child from a disease environment we can be more sure of saving him from the clutches of the besetting malady of his father or his mother. This is eminently true, and there are many social agencies nowadays which take note of this fact and devote all their energies in an endeavor to improve the health environment of weakly and sickly children, often to the extent of removing such children from their homes and placing them in more salutary surroundings for a season.

In the case of nervous disorders, as we suggested above, the importance of heredity cannot be overestimated. From parentage in which there have been taints of insanity or nervous instability or neurotic tendencies are almost certain to issue children who tend toward those peculiarities. Thus, the children of parents who are nervously unstable, or who are mentally disordered, such for example as being subject to neurasthenia or to insanity, will bear in their own nervous systems the weaknesses of their parents. These inborn weaknesses may or may not become pronounced during the lifetime of the individual. In case of a thoroughly wholesome environment and hygienic living, with tempered work and relaxation, persons of neurotic heritage may often continue tolerably normal throughout life; but let the environment be one of worry and dissipation or of

untempered toil or of unwholesome surroundings, and the lurking disorder is likely to become pronounced at any time. Generations of well-ordered living in a family line thus subject to nervous disorders are required before such taints are obliterated and the original stability of the nervous system restored.

TOPICS FOR SPECIAL STUDY AND REPORT

1. Distinguish carefully between heredity and environment.
2. Can you identify any of your own physical characteristics or moral and mental capacities with those of either parent, or any of your grandparents?
3. Can you illustrate this lesson by describing to the class the peculiarities of any family in your own neighborhood wherein the influences of heredity are to be seen in any particularly marked way?

THE LESSON APPLIED

1. Is there any possible danger in interfering with the normal left-handedness of a child?
2. Since the heredity of children is so varied, what is to be said in favor of individual as opposed to group instruction? What are the practical difficulties in the way of any wide introduction of the former into our schools?
3. What basis does vocational or prevocational guidance have in human heredity?
4. What efforts are now being made by school administrators to provide for more homogeneous groupings of children in the schoolroom according to their natural abilities?

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LESSON 23

HEREDITY (*continued*)

2. Three Famous Laws of Heredity

IN no possible field of investigation is there so much of fascination as in the field of heredity, either human, animal, or plant. You are doubtless familiar with some of the interesting results which have been obtained within recent years in the production of new and improved breeds of animals and plants. Finer, more luscious fruits and stronger, fitter animals have been evolved by scientific breeding and grafting on the part of men devoted to experimentations in heredity. Even in ancient times, the Romans and the Egyptians and other early peoples knew certain fundamental facts concerning the science of breeding, although their knowledge was largely hit-or-miss and was never built up into a body of dependable practice. It remained for the scientific movement of the last century to awaken men to the limitless possibilities of heredity, and to incite them to set to work to amass through experimentation a body of exact knowledge of hereditary principles. It must be confessed, however, that thus far only a beginning has been made in this interesting undertaking, although thousands of workers all over the world have been and are engaged in it. The problems of heredity are so elusive and so difficult to approach that it requires years of careful experimenting and study for the establishment of dependable principles. The result is that while we possess at the present time a considerable number of interesting theories and principles of heredity, we are not able to say that the greater part of them are universal and invariable. In fact, there appear to be exceptions to all of them, either because the theories themselves are inexact, or because it has been found impossible to discover perfectly pure, un-

mixed individuals upon which to base them. This is especially true in experimenting upon human heredity. There are, however, three laws which seem to be constant and tolerably dependable; at least they are the only three that head the list of all proposed principles which are able to sustain examination and application in the greatest number of instances. Let us pause to consider each of these theories.

Mendel's law. Among the great number of individuals who have been attracted by the fascination of hereditary principles to make careful and scientific study of them, Gregor Johann Mendel deserves first place after Darwin himself. Mendel was an Austrian monk living in the second half of the nineteenth century, and a teacher of the physical and natural sciences in a monastic school at Brünn. In the garden connected with his monastery he carried out the experiments which have since made his name famous, and been embodied in what is known as *Mendel's Law of Heredity*. For eight years he planted successions of simple garden-peas in a little corner of his garden, keeping careful records of all experiments and noting carefully every factor of significance entering into them.

In his earlier experiments he used tall and dwarf peas of pure strains, crossing them artificially and noting the results in several subsequent generations. In the first generation he found that all the offspring were of the tall variety, like the first parent; none were dwarf. He therefore came to the conclusion, checked up by many other experiments, that one of the parents, the tall pea, contained some element within it which might be said to be *dominant* over corresponding elements in the dwarf pea, resulting in imparting its quality of *tallness* to the progeny. But when he crossed these offsprings of the tall and dwarf peas he made the discovery that 277 dwarfs were produced, while 787 were of the tall variety. Or, in other words, Mendel found that the dominant element reappeared in the second generation in approximately the ratio of three to one, while the dwarf element which had not appeared at all in the first

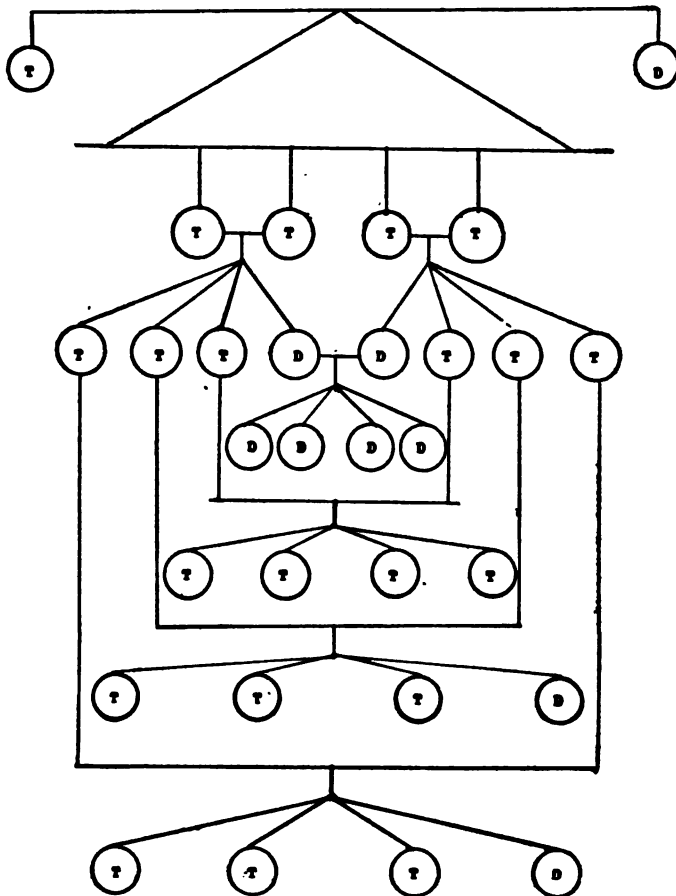


FIG. 4. MENDEL'S LAW

T = peas of a tall variety; *D* = peas of a dwarf variety. Tall peas are seen to be dominant over dwarf. A study of the diagram will indicate the results of crossing the two sorts. (Sketch by the author.)

generation now made its appearance in the ratio of approximately one to three. Hence Mendel concluded that in addition to the dominant element there must also be a

recessive element present in a latent form which tended to come into dominance in approximately one out of three of the progeny in the second generation. Further experimentation with smooth and wrinkled peas, and with yellow and green peas, and with colored and white peas, showed the same phenomenon; i.e., that in the first generation of crossing only the one element reappeared in the offspring. Thus, smooth peas were found to be dominant over wrinkled, yellow over green, and colored over white, etc. In the second generation, too, he found wrinkled peas appearing among the smooth in the ratio of one to three, and in like manner green among the yellow and white among the colored, and always in the same approximate one-to-three ratio.

Carrying on his experiments with these peas of the second generation, one out of four being dwarf or wrinkled or green or white, depending upon the sort of peas originally selected as parents, Mendel found that in the case of those in which the recessive element became dominant in the second generation all subsequent descendants bred pure; i.e., that from the dwarf or wrinkled or green or white peas crossed with others of the same parentage came only dwarfed or wrinkled or green or white offspring. On the other hand, from the three other sorts of peas which remained smooth or yellow or colored in the second generation, he found in the third generation that one remained pure, always thereafter breeding true, while the remaining two continued "hybrid," giving in subsequent generations the ratio of three dominant to one recessive.

Mendel formulated his discoveries into what has since become known as *Mendel's Law*. It may be stated thus: hereditary characters are ordinarily independent elements which — after the first generation, in which one element is dominant over the other — tend to reappear in the ratio of three dominant to one recessive in the second generation, the recessive breeding thereafter true, but the dominants repeating the history of the first generation in two cases and becoming pure dominant thereafter in the third case.

It is evident to you that, if the same relationship of dominant and recessive characters obtains for human beings as obtains for garden peas, the significance of the Mendelian Law is very great indeed in the heritage of children. Desirable dominant characters are to be preserved so far as possible, while undesirable recessive characters are to be concealed; or, on the other hand, undesirable dominant characters are to be eliminated and desirable recessives preserved. Obviously the only way in which to accomplish this is to prevent admixture of strains whose offspring will tend to bring into prominence the undesirable character. Already we have laws in a great many States which forbid marriages among cousins, in order to offset any likelihood of undesirable characters meeting their correspondents in offspring of the same original strain. Suppose, for example, that a normal woman of a strain in which there is imbecility marries a man who is likewise normal, but coming from the same strain. The result in the children would be probably weak-mindedness and perhaps positive imbecility. The same might be expected to hold true of parents in whose common ancestry were tendencies toward insanity or neurosis or constitutional weakness or epilepsy.

But not only is there danger in consanguineous marriages that an undesirable character will be intensified in the offspring: a similar danger exists in marriages of people who are quite unrelated but in whose ancestral stocks there exists weaknesses of the kind mentioned. Hence the problem of being well-born is a tremendous one which becomes the more complex the further we inquire into it. It is certainly a fortunate tendency in normal human beings that only normal marry normal; it is likewise true, however, that ordinarily only feeble-minded marry feeble-minded. There are dangers in both tendencies: in the first because of possible mutual weaknesses which are recessive and which tend by union to be intensified; and in the second because, as Walter remarks, "Nothing plus nothing equals nothing: from feeble-minded parentage only feeble-minded progeny

can issue." The latter condition of marrying furnishes the most alarming possibilities in heredity, both because of the persistence of feeble-minded lines and because the progeny of the weak-minded is usually very prolific.

Every child born into the world deserves to be well-born in order to stand a fair chance in the struggle for survival and advancement. Not all children, however, are well-born. Very likely among your own range of acquaintance there are several families in which you would hesitate to say that the children were well-born. You, of course, are aware of the immense expenditure which your State is obliged to make every year in order to support and maintain and train as far as possible those of its citizens who are unable through unfortunate heritage to maintain themselves. You are cognizant, also, of the cost in money and the expenditure of effort and time required in the caring for those in the public schools who (very often) through lack of being well-born are unable to keep pace with their fellows, and have to be instructed in special classes or else removed entirely from the public schools and placed in institutions. On the grounds of expenditure alone, without taking into account the personal and sentimental aspects of subnormality among children, society would be well repaid if every child could be well-born. Mendel's principle of the *dominant* and *recessive* characters may come in time to be a factor of significance in making it possible for all children to be thus "created equal." The fact remains, however, that such human institutions as marriage are very delicate problems to discuss and still more delicate to modify or attempt to control.

It should be noted in passing that wherever Mendel's Law has seemed to apply to the inheritance of human characteristics, according to the best attested reports, those characteristics have without exception been abnormalities rather than normalities. Thus, white blaze in the hair, short-fingeredness (brachydactylity), etc., seem to follow the Mendelian hypothesis.

Galton's Laws. Among all the inquirers into the nature of human heredity none has been more interested and interesting than Sir Francis Galton, himself a cousin to Charles Darwin. The methods which Galton employed are, however, open to some criticism because they were based rather upon statistical information than upon actual experimentation and study of definite pedigrees. Since Galton's time the statistical method has, however, become in the hands of the eugenists a very valuable instrument in the investigation of hereditary principles. Galton's first law, thus established, he termed the *Law of ancestral inheritance*. According to this principle, which he believed to be justified by his observations and inquiries, the contribution of the immediate ancestors to the offspring exceeds that of any other ancestors and *equals that of all the others*. That is, every child inherits approximately one half of his characteristics from his two parents, one fourth from his four grandparents, one eighth from his eight great-grandparents, one sixteenth from his great-great-grandparents, and so on back indefinitely in geometric ratio. This is certainly a very satisfying and simple explanation of all the intricacies of heredity, but unfortunately it fails utterly to explain marked variations from the near ancestors in children and likewise fails to account for occasional almost perfect duplicates of parent or grandparent and child or grandchild.

Another law proposed by Galton, the *Law of filial regression*, while it is commonly observed to be true in large numbers of cases, is open to somewhat the same criticisms as his other law. According to his second principle, Galton concludes that all children tend to approach a *type* physically and probably mentally. That is, parents of average height will produce children of average height; children of very tall parents, on the one hand, tend to be taller than the average, but not so tall as their parents; while children of very short parents tend to be shorter than the average, but not so short as the parents. This has been nature's

way of maintaining the height of the race through countless generations at about the same average. On the mental side the law may be illustrated thus: children of very talented parents tend to be more talented than the average but not so talented as their parents; while children of sluggish

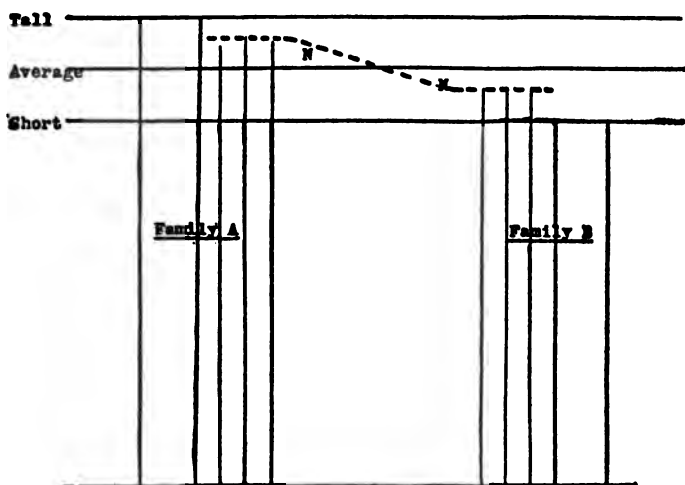


FIG. 5. FILIAL REGRESSION

The parents of *Family A*, being taller than the average, will, according to Galton, have children who will be shorter than they, but taller than the average. The parents of *Family B*, on the other hand, being shorter than the average, will have children taller than they, but not so tall as the average.

parents tend to be less sluggish than their parents but more sluggish than the average. Subsequent investigations by Karl Pearson and the school of biometricians have in the main borne out Galton's results.

Both of Galton's laws are very interesting and suggestive, but it is perfectly obvious that often nature sets aside both of them altogether and creates an individual whose characteristics can be accounted for neither by the one law nor by the other. They appear to be valid only when applied to great numbers of individuals, and are apt to be totally

invalidated when applied to a single family. The intricacies of human heredity are so complex and the variations in parents and ancestral lines and strains so labyrinthine that in all probability we have scarcely yet scratched the surface in searching after nature's ultimate and invariable laws.

TOPICS FOR SPECIAL STUDY AND REPORT

1. Study your own characteristics with a view to determining from which of your parents you inherit the more, if either. Can you determine the extent of your heritage of characteristics from a grandparent?
2. What is meant by the term "eugenics"? How does it differ from "euthenics"?
3. Be prepared to report in class upon some interesting experiment in animal heredity to be found in the following list of selected references.

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1. Castle, W. E. *Heredity*, chap. 3.
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4. Walter, H. E. *Genetics*, chap. 7.

LESSON 24

HEREDITY (*continued*)

3. Inheritance of Acquired Characteristics

The problem stated. One of the most interesting questions arising out of a study of heredity is the question as to whether or not acquired characteristics are heritable. Will the children of a man who has made the most of all his opportunities with the result that he stands among the leaders of his profession or vocation be for that reason any better born than had the same father been less successful? Or, to make the case still more concrete, will a son born to a father who has, by dint of persistent application, made himself famous in the world of art be better endowed at birth than another son of the same father born ten years before, at a time when he was still struggling in art as a promising young amateur? Or again, will a daughter born of a young mother who is interested in story writing, but whose manuscripts thus far have always been returned "with thanks," be less capable of a literary career than another daughter born several years later after the mother has made her name and is recognized as a talented writer? In other words, the question of acquired characteristics or of non-acquired ones concerns itself with whether or not variations which are not inborn, but which are acquired during the lifetime of an individual by experience or practice or use — or disuse or mutilation — can be transmitted by that individual to his children. It is evident that if the tendency toward such transmission can be demonstrated our problem of teaching children will be immensely simplified, for we shall know exactly what are the possibilities in every child in our schoolroom and can shape our instruction and training accordingly.

Imagine if you can the possibilities of teaching children

whose innate abilities or disabilities are known exactly. By stressing individual instruction and dealing with each child according to his inner capacities and abilities we might surely within a very few years raise up a cumulative crop of geniuses such as the world has never known! And fancy, too, how the descendants of our geniuses in the next generation would overtop the attainments of their mediocre fathers! Unfortunately, however, the evidence supporting the heritability of acquired characteristics is almost wholly negative, and it is extremely likely that we shall have to be content to continue our training of children for a good many generations yet to come along somewhat the same fashion as at present.

Lamarck's theory. In the meantime this question as to the heritability or the non-heritability of acquired characters is agitating a great number of students and investigators in heredity. At the present time the thoughtful and dependable opinion of investigators is divided very strongly on the question, with the weight of established evidence on the side of the opposition; i.e., of those who hold that such characters are not inherited. The supporters of the affirmative camp; that is, of those who admit the heritability of such characters, are known as the Neo-Lamarckians, after the chief proponent of the theory. According to Lamarck, the whole means of evolution of a species are due to the inheritance through desire or need, use or disuse, or change in living conditions, of acquired responses. Gradually such accretions of the experiences of numberless generations must result in the slow evolution of the species concerned.

Weissmann's theory. The name which is inseparably linked with the opponents of Lamarckianism is that of Weissmann who, with his followers, deny the possibility of the inheritance of acquired characteristics and maintain that there is a complete separation between the germ cells and the body cells. Hence, while external influences may affect the body profoundly, such influences are not trans-

mitted through the germ cells to the next generation. It follows from this that only such influences as are able to modify the germ cells can have any effect upon progeny. As to what such possible influences over the germ cells are, we are still relatively ignorant. But your own observation has certainly been extensive enough to assure you of the truth of the contention of Weissmann that acquired bodily characteristics cannot be inherited. For example, the children of parents who have acquired deformities such as the loss of a hand or a limb are not for that reason deformed. Nor are the descendants of parents who acquire round-shoulderedness or bow-leggedness or frightful scars effected by these characteristics in their parents. As Conklin very aptly illustrates it: "Wooden legs do not run in families, but wooden heads do." The former are acquired, while the latter are innate. Suppose, for instance, that the future sons and daughters of the thousands and thousands of soldiers who have lost arms or legs or other parts of their bodies were doomed to inherit those identical features in coming ages. What a spectacle of future unhappiness we should be forced to contemplate!

A very interesting series of experiments have been conducted by Weissmann in demonstration of his disbelief in the theory of the Lamarckians. For twenty generations in succession he cut off the tails of a large number of mice without ever being able to produce in their descendants tailless mice. In more recent years other interesting experiments have been performed on rabbits, Belgian hares, guinea pigs, etc., always with the same apparent substantiation of Weissmann's position.

It is, however, a very difficult matter to experiment upon the transmission of *mental* as opposed to *physical* characters, and as yet little has been done in this field. About all that can be said, pending the results of further investigations in heredity, is that acquired mental characters are probably no more transmitted to subsequent generations than are acquired physical ones.

Frances Gulick Jewett, in her interesting little book *The Next Generation*, reports the following pointed conversation which she had with a neighbor:

A young mother expressed the greatest disappointment over the fact that her daughter was not musical.

"I simply cannot understand it," she exclaimed. "Before the child was born I spent hours every day practicing the piano, because I was determined to have at least one musical person in the family. Does n't science say that we can stamp our children this way or that before they are born? I have proved that we can't."

"Has she no musical ability whatever?" I asked.

"None at all," was the answer; "neither have I; neither has her father. That's precisely why I practiced so. I was trying to help the family out. I wanted to put musical power into it."

"And you failed?" I asked.

"Absolutely," was the answer.

"The trouble was with your own lack of information," I continued. She looked surprised, but I gave her no time to speak. "The process of evolution proves that we stamp our children with what is within ourselves, not according to what we make ourselves do. The doing is n't going to stamp children before they are born; it is the being that does it. Is n't your daughter rather persistent?"

"Indeed she is," said the woman, looking at me in astonishment. "She's the most persistent thing you ever saw. But what gave you the idea? You have n't even seen her."

"No," I answered, "but from your story I see that you yourself are persistent, not musical. Where was her musical taste to come from if neither you nor her father had it? You must n't blame her. Laws of nature are responsible."

It would be hard to find a more interesting and significant story than this. The same author calls attention also to the fact that for more than 300 years the people of China bound their infants' feet, but were never able to produce a generation of deformed feet in their daughters: each generation had to be bound just as the preceding had been. So, she adds, a woman might crimp her hair from the cradle to the grave without giving birth to a child with curly hair. Alas for the parents who longingly covet for their own

straight-haired daughters the curling locks of a neighbor's child!

How, then, does evolution take place? How is it that a species ever undergoes transformation from age to age? Why do bodies grow larger or smaller, or senses sharper, or habits different, or instinctive tendencies varied, or color or form modified? How does it happen, for example, that from the original ancestor of the *genus felis*, or cat family, there have developed the modern cat and wild-cat and panther and leopard and tiger and all the other variants of an original common ancestor? One answer given to this perplexing question is to the effect that at certain times in the struggle for survival *sports* chanced to appear which differed in some marked way from their parents. As to the exact cause underlying the appearance of the sport, science cannot yet inform us. We know, however, that such sports do come into being among a great number of species, that they have the capacity of handing down their peculiarity to their own descendants, and that in this way sudden and apparently unexplainable changes in structures appear and continue until natural selection either causes them to perish in the struggle for survival, or else selects them for further evolutionary progress because of the fitness of them to survive. This theory of the sudden and unheralded appearance in a species of sports is called the *mutation theory*, or the theory of De Vries, after its discoverer, Hugo de Vries. The most interesting illustrations of mutations in human beings are to be found in the sudden appearance in the child of apparently normal parents of six fingers or toes, or two-jointed digits, which tend to reappear in other generations until they are finally out-crossed by marriages with normals.

It would seem, however, that the theory of De Vries, while credible as a possible explanation of occasional rather marked variations from the parents in the offspring, is not an altogether plausible explanation of those very slight variations which lie, according to Darwin, at the basis of

development, as we have seen. Weissmann and his followers, the Neo-Darwinians, take for granted the gradual establishment of new characters through natural selection. "The progeny of a fluctuation (i.e., of slight variation as opposed to sudden mutation) will vary," says Walter, "around the old average of the parental generation, while the progeny of a mutation will vary around a new average set by the mutation itself." Weissmann, as we noted above, denies the heritability of acquired bodily characteristics, since their heritage would be assuming the principle that modification is able to modify also the germ plasm. The experiments on mice which he conducted, produced somatic (i.e., body) modifications in the parents, but no tailless descendants were thereby induced. For Weissmann, there are no "acquired characters" save those arising from such modifications as are able to affect the germ plasm itself. He postulates the "continuity of the germ plasm," by which he means that it is forever insulated from the somatic characters, and hence unresponsive to any influence which affects the latter merely. He accounts for variation, or progress, by the theory of "amphimixis," which asserts that one of the prime purposes of sexual reproduction is that the germ elements of two individuals may be commingled, thus making inevitable certain combinations of characters and perchance the production of quite new ones. Natural selection seizes upon any variation thus engendered and either makes possible its continuation or its discontinuance inevitable.

Finally, it should be impressed upon us all that as yet there can be no finality of theory or truth in heredity. The weight of opinion is to-day unquestionably toward Weissmannism; to-morrow the experiments of scientists may cause the pendulum of conviction to swing back to the Lamarckians, although, as Conklin points out, "even the strongest defenders of the inheritance of acquired characters are constrained to admit that it occurs only sporadically and exceptionally." Only one thing is surely true: the mys-

teries of heredity comprise a great, untrodden field wherein scarcely the surface has as yet been touched. For the student and for the teacher it is necessary to keep an open mind, and to await with interest the results of deeper delving. It may be that many of nature's secrets can never be wrested from her, for she appears to delight to tantalize her explorers in apparently assuring them of one conclusion and in the next moment upsetting all their fine-spun theories by appearing to contradict herself.

In the next chapter we shall dismiss our study of theories and turn our attention to a survey of some of the more interesting and significant studies which have been made in the field of human heredity, paying special attention only to such studies as are of significance to us as teachers of children.

TOPICS FOR SPECIAL STUDY AND REPORT

1. Look up in some standard reference the theories of Lamarck and Weissmann.
2. Can you offer any illustrations either of the truth or the untruth of the inheritance of acquired characters?
3. Exactly what is meant by an acquired character? By an inborn character? (See reference 1.)

THE LESSON APPLIED

1. If the characters which parents acquired during their lifetime could be passed on to their children, might we not be justified in expecting babes to be possessed of complete intelligence at birth, with ability to talk, reason and cogitate like their parents? Is it not rather the case, however, that the intelligence and ability of babes register at zero, and that every individual born into the world must pass laboriously up the pathway of experience and formal education before he can be said to be possessed of rational intelligence, regardless of the mental caliber of his parents?
2. If the Lamarckian theory were true, might we not expect the crop of geniuses in each age to surpass that of the preceding until a race of supermen would ultimately and soon result? What would be the corresponding tendency in the crop of abnormals, criminals and non-descripts from age to age? Is not Dame Nature after all wise in pro-

viding for the continuity of the germ plasma in relatively complete isolation from the chance influences of time?

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2. Jewett, F. G. *The Next Generation*, chap. 11.
3. Walter, H. E. *Genetics*, chaps. 3, 4, and 5.

LESSON 25

HEREDITY (*continued*)

4. Studies in Heredity

A promising method of investigation. The direct study of problems in heredity is always promising because the world is full of people who so far diverge in their behavior from that of normal individuals as to offer excellent opportunity for the scientist to investigate the possible factors leading to such abnormality of conduct. Very likely you yourself know of at least one family in which exist such deviations from the normal as epilepsy, or idiocy, or insanity, on the one hand, or the tokens of genius and unusual talent on the other. Students of heredity long since were attracted to the study of persons or families of this nature, with the result that at the present time we possess a considerable number of illuminating inquiries which, while they do not always throw any particularly new light upon the mysteries of heredity, do however serve to demonstrate our previous suppositions in the more obvious aspects of human inheritance to be true. One of the most interesting of these studies of heredity is that made by Goddard, and published under the title of *The Kallikak Family*.

The Kallikak family. Some years ago there appeared at the Vineland Training School in New Jersey, a school for the study and care of the feeble-minded, a girl who especially interested Dr. Goddard and his assistants because of the very obviousness of her subnormality and at the same time her apparent brightness. The fictitious name which the girl bears throughout the records is Deborah Kallikak. Inspired with a curiosity to trace the parentage and ancestry of the girl as far back as possible, the workers at Vineland set on foot an exhaustive investigation into the mystery of Deborah's ancestry. Back through generations

of ancestors the investigation led them, now becoming so obscure and uncertain that they gave up for the time being in despair, now fresh facts coming to light to encourage them in their difficult undertaking. For you must appreciate that delving into genealogy becomes increasingly difficult as the ancestors studied become more and more remote from the present. Sometimes students in heredity labor for months upon a certain line of people, only to find that there are hopeless breaks in the ancestral links which cannot possibly be unearthed; or again to discover that a certain supposed branch of the line upon which one has been working for weeks is after all quite unconnected with the family under consideration. And yet, in spite of all its intricacies and occasional bafflings such investigation cannot but be fascinating. And so Dr. Goddard's workers found it in their efforts to unravel the elusive threads of Deborah Kallikak's parentage and forbears. And "the surprise and horror of it all was that no matter where we traced them, whether in the prosperous rural district, in the city slums to which some had drifted, or to the more remote mountain regions, or whether it was a question of the second or the sixth generation, an appalling amount of defectiveness was everywhere found."

At last, after many months of careful investigations, the ancestry of Deborah was charted, together with the records of several hundred descendants of the original Martin Kallikak, Sr. The following is, briefly, the story of Deborah's ancestry in direct line. Back at the time when the army of the Revolution was being formed, Martin Kallikak, Sr., then a young man under twenty-one years of age, joined one of the numerous military companies being made up in his neighborhood and, at one of the taverns frequented by the soldiers, he met a feeble-minded girl by whom he became the father of a feeble-minded son. The mother gave to this child the full name of its father, Martin Kallikak, Jr., and it was this same Martin, Jr., who became the great-great-grandfather of Deborah. From him the investi-

gators were able to trace no less than 480 descendants, of whom 143 were feeble-minded, while only 46 could be discovered to be definitely normal! Among these 480 human beings springing from the line of Martin Kallikak, Jr., who was himself known as "the Old Horror," the following have been diagnosed:

- 36 illegitimates.
- 33 sexually immoral persons, mostly prostitutes.
- 24 confirmed alcoholics.
- 3 epileptics.
- 82 died in infancy.
- 3 criminals.
- 8 kept houses of ill-fame.

These 480 descendants in direct line from Martin Kallikak, Jr., married naturally into other families of about the same type, so that the investigators were able to chart altogether 1146 individuals thus contaminated by the bad blood of the Kallikaks. Of these 1146 individuals 262 have been classed already as positively feeble-minded, with 581 still undetermined!

And this is a family record!

Let us look now at another side of the same picture. After Martin Kallikak, Sr., left the army at the termination of the Revolutionary War he married a normal girl of good family like his own, and through this union there has descended another line of human beings in every way the reverse of the first line initiated with the alliance made with the feeble-minded girl. Altogether Dr. Goddard was able to tabulate 496 direct descendants of this second union of Martin Kallikak, Sr. And what a different and refreshing picture is presented in this side of the line. Of the entire 496 individuals, not a single person has been found who was not normal in every respect! Three of them were somewhat degenerate sexually or alcoholically, but this is a ratio which could probably be equaled in but few families in which nearly 500 persons were studied. But not only were all

these persons normal; more than that, "all of the legitimate children of Martin, Sr., married into the best families in their State, the descendants of colonial governors, signers of the Declaration of Independence, soldiers, and even the

THE KALLIKAK FAMILY.

Martin Kallikak, Sr.

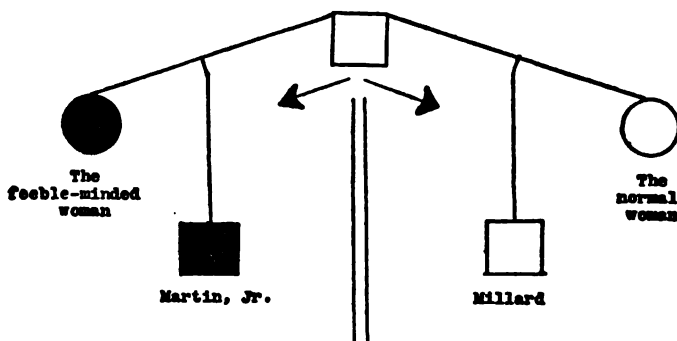


FIG. 6. A FAMILY RECORD

From this line a total of 480 direct descendants were traced. Of them 143 were feeble-minded. Only 46 normals were found

From this line 496 direct descendants were traced. NONE WERE FEEBLE-MINDED! Many eminent people are included in this branch of the Kallikak family

founders of a great university. Indeed, in this family and its collateral branches we find nothing but good representative citizenship. There are doctors, lawyers, educators, traders, landholders, in short, respectable citizens, men and women prominent in every phase of social life. They have scattered over the United States and are prominent in their communities wherever they have gone. . . ."

This is another family record!

The conclusions from such an interesting and significant investigation as this are obvious. The study is especially interesting because both lines of descendants issue from the same original father, Martin Kallikak, Sr. By marrying

into a normal family he produced good citizens; by indulgence with a feeble-minded girl he produced not only bad citizens, but criminals and profligates and idiots. There is probably no more striking illustration of the power of heredity than this study of the Kallikak family. Mate good with good and good will inevitably result; mate good with positively bad and a mixture will result in which the bad will be striking if not predominant. Try if you can to visualize and fancy all the shame and the degradation and the crime and the suffering and the filth of the feeble-minded line! Estimate if you can the expense which society has been compelled to sustain in supporting the paupers and penalizing the criminals, and protecting itself from the perverts during the hundred and fifty years or less since Martin Kallikak inflicted society with the fruits of his indiscretion. And then pause to reflect that the end is not yet, for with every oncoming generation there will be born again other and yet other children from unfortunate unions between the Kallikaks and other families of low-grade abilities and positively criminal or licentious tendencies, who will in turn languish through your schoolrooms and leave a murky trail across the age in which they live, until the final toll of suffering and crime and outrage cannot be computed.

The Jukes family. Another interesting study in heredity, somewhat older than that by Dr. Goddard, is that of *The Jukes*. The author of this contribution to the science of heredity, Mr. Robert L. Dugdale, chanced to be deputed by the New York Prison Association, in 1874, to visit and report upon thirteen of the county jails in the State. In one county into which his mission sent him, Mr. Dugdale discovered in the jail awaiting trial six different persons all of whom were related. There were two brothers in one branch of the family who were under trial for assault with intent to kill; a man of fifty-five who had received stolen goods; his daughter held as a witness against her own father; her uncle, charged with burglary, and an illegitimate daughter of the

latter's wife held on a charge of vagrancy. Naturally such an array of crime within the same family excited Dugdale's curiosity, much as Deborah Kallikak excited the curiosity of the Vineland investigators, and he was urged to make a more thorough inquiry into their family history and heritage.

The investigation revealed the fact that these six individuals belonged to a family reaching back to the earliest colonists. It had lived in the same locality for generations, becoming so despised by the self-respecting members of the community that their family name had come to be a by-word and a hissing. Of twenty-nine male relatives of six persons in the county jail, it was discovered that seventeen were criminals, fifteen of them being convicted and serving sentences aggregating seventy-one years. Further inquiry led to the discovery that here was a family most of whose members lived in filth and squalor, and had always done so since time immemorial, and whose highest aims in life appear always to have been to prey in some manner upon the community. All in all it was a family of ne'er-do-wells, criminals, paupers, thieves, and profligates. Mr. Dugdale was able to trace the source of the family back to one Max Jukes, a frontiersman, born slightly before 1740, and living as a hunter, fisher, a hard drinker, jolly and companionable, averse to work, a worthless, useless mortal who had a numerous progeny and nothing to support them with, as is so often true of this type of individual. Through an alliance formed by one of the sons of Max with "Margaret, mother of criminals," together with other marriages or alliances among other equally worthless individuals, several long lines of descent were initiated. From five of these lines, Mr. Dugdale registered and tabulated 540 individuals related by blood to the Jukes and 169 by marriage or cohabitation, a total of 709 persons. The investigator reached the conclusion that altogether the total number of individuals of this line reached approximately 1200, of whom he estimates the following characteristics and dispositions:

280 paupers.
140 criminals and offenders.
250 arrests and trials.
60 habitual thieves, convicted or unconvicted.
7 murderers.
50 prostitutes.
300 died in infancy or prematurely.

To these are to be added a great number of other categories which we need not pause here to enumerate. Suffice it to say that the investigator concluded from his survey of the Jukes that, up to 1875, the State of New York had been deprived of approximately \$1,308,000 in the care and the prosecution and the maintenance of and the loss of production from these 1200 people. About the only contribution which the Jukes made to the country in return was an "unending contribution of crime, pauperism, disease, viciousness, and immorality," which has left behind it a bitter heritage for coming generations. It is, in other words, the same story of the Kallikaks, except that in the case of Dr. Goddard's family the heredity was feeble-mindedness, whereas in the records of the Jukes feeble-mindedness is a lesser factor than crime and pauperism. It makes little difference what an individual is, whether he be idiot, criminal, or ne'er do-well, blood is certain to reveal it in his progeny.

Thus with another family record!

In the next lesson we shall turn to study a more cheerful side of heredity; i.e., lines of descent in which positive and beneficial tendencies in the ancestral stock resulted in much better citizens than did the descendants of the Kallikaks and the Jukes.

TOPICS FOR SPECIAL STUDY AND REPORT

1. Look through the files of *The Training School*, a monthly bulletin published by the Vineland investigators, paying special attention to the sort of work which is being done in that institution.
2. Familiarize yourself with the work which is being done in your own

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**State in the way of prevention or treatment of mental defectiveness.
What are the agencies and organizations which are at work upon the
matter?**

SELECTED REFERENCES

- 1. Dugdale, R. L. *The Jukes.***
- 2. Goddard, H. H. *The Kallikak Family.***

LESSON 26

HEREDITY (*continued*)

5. Studies in heredity (*continued*)

The Edwards-Tuttle family. In the year 1900, Dr. A. E. Winship published the results of an inquiry into the heredity of the Edwards-Tuttle family of Connecticut, a line of descent which was just as remarkable in the demonstration of the force of heredity on the positive side as was that furnished by the Kallikak or the Jukes family on the negative side. Here was a family of people numbering among its ancestry and present relatives some of the greatest names to be found on the roll of our most eminent and illustrious citizens. The investigator thus sums up the famous family line:

Thirteen hundred and ninety-four of his [Jonathan Edwards's] descendants were identified in 1900, of whom 295 were college graduates; 13 presidents of our greatest colleges, besides many principals of other important educational institutions; 60 physicians, many of whom were eminent; 100 and more clergymen, missionaries or theological professors; 75 were officers in the army and navy; 60 were prominent authors and writers, by whom 135 books of merit were written and published and 18 important periodicals edited; 33 American States and several foreign countries, and 92 American cities and many foreign cities, have profited by the beneficent influence of their eminent activity; 100 and more were lawyers, of whom one was our most eminent professor of law; 30 were judges, 80 held public office, of whom one was vice-president of the United States; 3 were United States senators; several were governors, members of Congress, framers of state constitutions, mayors of cities, and ministers to foreign courts; one was president of the Pacific Mail Steamship Company; 15 railroads, many banks, insurance companies, and large industrial enterprises have been indebted to their management. Almost if not every department of social progress and of public weal has felt the impulse of this

healthy, long-lived family. It is not known that any one of them was ever convicted of crime.

What a contrast between this family record and those of the Kallikak, and Jukes lines! In the one case social uplift, good citizenship, eminence, genius; in the other, social degradation, crime, idiocy. And yet in both cases it was the same subtle power of heredity which largely predetermined the characteristic traits: in the former cases, this force was beneficent; in the latter, malignant.

Galton's Hereditary Genius. Many years before Dr. Winship published the records of the Edwards-Tuttle family, Sir Francis Galton, whom you recall as the originator of the two laws of *ancestral inheritance* and *filial regression* outlined in Lesson 23, published a very interesting volume, entitled *Hereditary Genius, An Inquiry into its Laws and Consequences*. The book was the result of a very exhaustive and painstaking study of a large number of eminent statesmen, scientists, literary men, artists, musicians, etc., together with many of their relatives, with the purpose of discovering whether or not such eminent persons numbered among their relatives and ancestry more persons of eminence than would be found to be true of the families and ancestors of average men. Galton's method deserves a word of explanation, since it involved the application of a theory or principle which is in itself interesting.

The method which Galton employed was, briefly stated, as follows. By dint of an examination of several biographical handbooks of his time, of the obituary notices published in the *Times* for a single year, and of other records of prominent men and women, he reached as a working basis the test of an eminent man as "one who has achieved a position that is attained by only 250 persons in a million of men, or by one person in each 4000, . . . although the mass of those with whom I deal are far more rigidly selected — many are as one in a million, and not a few are as one in many millions. I use the term 'illustrious' when speaking of these."

With the aid of this standard of "one in 4000" Galton proceeded to "measure" the relatives and ancestors of some of the greatest personages the world has ever produced. In this section we can only refer to a very few of the thousands of individuals included in the survey.

In the case of great generals, Galton found that Alexander the Great was himself the son of an illustrious father, Philip II of Macedon, and an exceptional mother, Olympias. Ptolemy-Soter I, King of Egypt, was Alexander's half-brother. Besides these illustrious relatives, Alexander's half-nephew, Ptolemy Philadelphus, his cousin, Pyrrhus, King of Epirus, and a son, Ptolemy Euergetes, were all famed men of varying degree. Napoleon, too, numbered among his relatives a mother, sister, brother, son, and two nephews whose eminence is unquestioned. Julius Cæsar's illustrious relatives included his mother, Aurelia; his daughter, Julia; his niece, Atia, who became the mother of Augustus; his great-nephew, Augustus Cæsar; his uncle, the Consul of Rome; and Mark Antony, who was also related to him. Hannibal's relatives well known in history were Hamilcar Barca, his father; Hasdrubal, his brother; Mago, another brother; and another half-brother who was a general in Spain. So in the case of P. Cornelius Scipio, conqueror of Hannibal — a father, grandfather, son, daughter, and two grandsons were all people of fame in their time.

Of literary men Galton demonstrated to his own satisfaction that the ancestral lines numbered other individuals of repute in a great number of instances. For example, the case of Charles Lamb and his sister is cited; as is also that of Macaulay, with his grandfather, father, uncle, cousin, and nephew, all of whom were illustrious statesmen or writers. Dean Swift, the satirist, was a first cousin of Dryden, the poet, and also of Deane Swift, his biographer. Theophilus Swift, a second cousin, was a political writer of much prominence. Sir Philip Sydney was the son of a prominent father and grandfather. He also numbered among his relatives a famed uncle, cousin, and a sister, Mary, to whom he dedi-

cated his *Arcadia*. A nephew of his also was a Chancellor of Oxford.

Among men of science Galton cites the line of Aristotle, whose father, grandson, and second cousin, Callisthenes, were known to fame. Francis Bacon, "the wisest, brightest, meanest of mankind," was the son of a Lord Chancellor of England, and of a mother widely known as a scholar. Other members of this family who attained prominence included a grandson, cousin, brother, two half-brothers, and a nephew whose names ranked high among the intellectuals of their day. Charles Darwin, the biologist, belonged to a family in which at least four others were noted naturalists.

Samuel T. Coleridge, among the poets, was the father of two illustrious sons and a daughter, and had three nephews, a grandson, and a cousin who became likewise famous. Wordsworth, too, numbered among his eminent relatives a brother, who was Master of Trinity College, and three nephews, one of whom was Headmaster of Harrow while the other two were known as excellent scholars.

One of the most interesting divisions is that of the musicians, and one of the most interesting families among them is that of Bach. Fifty-seven members of that family found places in the biographical collections of musicians. The father of Sebastian Bach was a distinguished organist. Bach's first cousin, J. Christopher, was one of the greatest musicians of Germany. His son, Guillaume Frederick, "Bach of Halle," was a man of great power and learning; Emmanuel, another son, called "Bach of Berlin," was the founder of pianoforte music. Another son, Christopher, called "Bach of England," was a very charming composer. Mendelssohn's grandfather was a celebrated Jewish philosopher; his father was a rich banker of Berlin. The great musician had a sister who was said to be Mendelssohn's equal at the piano, and possessed of high genius. In the family of Mozart, the father of the great composer was a famous violinist and composer. A sister of the first was likewise a talented musician. Mozart had two sons,

Charles and Wolfgang, both of whom were accomplished players and composers.

A great deal has been written about this investigation by Galton, and some of the criticisms which have been made of it are not without good basis. For example, many of the greatest musicians, such for example as Wagner, Schubert, and Handel, are not included in Galton's list of musicians. The same is true of his lists of authors, scientists, poets, *et al.* It has been objected, too, that many of the persons whom he does include in his records were neither geniuses nor near geniuses, but were rather cited by Galton in order to make out his case. In spite of these substantial criticisms, however, Galton demonstrated conclusively that talent in a very great number of families finds expression in more than one member of such families. Of the exceptions to this rule he admitted that he did not take account. His own conclusions are "that eminently gifted men are raised above mediocrity as much as idiots are depressed below it"; that "few people win high merit without possessing peculiar gifts"; that "if a man is gifted with vast intellectual ability, eagerness to work, and power of working, such a man cannot be repressed"; and that "we must not permit ourselves to consider each human or other personality as something supernaturally added to the stock of nature, but rather as a segregation of what already existed, under a new shape, and as a regular consequence of previous conditions. . . . We may look upon each individual as something not wholly detached from its parent source, — as a wave that has been lifted and shaped by normal conditions in an unknown, illimitable ocean."

Heredity in Royalty. In 1906 Dr. Frederick A. Woods published another study in heredity, entitled *Mental and Moral Heredity in Royalty*. The personages investigated were the members of the royal families of the chief countries in Europe, and the method employed was similar to that used by Galton in his study of hereditary genius, discussed above. On the basis of the law of *deviation from the average*,

Dr. Woods graded all the 832 characters studied on a scale of 10, according to both their intellect and their morals. Obviously, from the very nature of the law, the greatest number of all should be found to occupy an average position on the scale around 4 to 6. Below 4 would be a decreasing number down to 1, the idiots and incompetents, while above 6 would be a correspondingly decreasing number of the unusually bright and the geniuses up to 10. As a guide in his classification he depended, as did Galton, on the leading biographical dictionaries of the time and upon the stamp which history has given to the rulers and their families.

By starting with the present King of England [at that time, Edward VII] and including all his ancestors to four generations, and then all the other descendants from these ancestors, and stretching out in every direction by this endless-chain method, I have at present obtained mental and moral descriptions of over 600 inter-related individuals, including pretty completely the following countries of Europe: England (House of Hanover), Germany, France, the Netherlands, Spain, Portugal, Austria, Italy, Russia, Denmark, and Sweden. The period covered extends in general back to about the sixteenth century, but in the case of Spain and Portugal to the eleventh century.

All the above families are related through some connecting link.

In general, without entering in detail into the results of Dr. Woods's interesting and laborious work, it may be said that his conclusions are much like those of Galton. He finds, for instance, that there is a distinct correlation between intellectual abilities and moral qualities in royalty; that neither luxury nor consanguineous marriages nor exalted position have proven unfavorable to the inheritance of ability; that "heredity explains all (or at least 90 per cent) of the intellectual side of character in practically every instance"; and that "even in the moral side of character, inherited tendencies outweigh the effects of surroundings." Wherever degeneration in royal lines has occurred, Woods

finds that such degeneration is to be explained on the grounds of pollution of the blood through marriage with a family in which a degeneration was then existing. However, degeneracy in royalty appears to be not nearly so evident as popular belief might lead us to think. In the 832 persons studied there were found no less than 25 world geniuses "who stand without superiors in the practical domains of war and government," a ratio which it would be hard to duplicate in any other department or condition of society. "The royal breed is superior to any other one family, be it that of noble or commoner." Finally, "the upshot of it all is that, as regards intellectual life, environment is a totally inadequate explanation."

It would appear, then, from these two classic inquiries into the nature of human heredity that heredity is a prime influence in shaping and moulding the possibilities of life. Environment remains a tremendous factor, as we shall see, in the evolution of every human being, but the driving force appears to be installed by heredity. In the next lesson we shall endeavor to draw some conclusions from our survey of heredity which will be of significance to our work as educators and trainers of the child.

TOPICS FOR SPECIAL STUDY AND REPORT

1. Study the principle of deviation from the average as outlined in Galton's *Hereditary Genius*.
2. Report upon the House of Hanover as tabulated by Woods in his *Heredity in Royalty*.

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LESSON 27

HEREDITY (*continued*)

6. The Heritage of the Children

What to look for in the observation period:

1. Evidences of mental or intellectual differences between the pupils, such, for example, as differences in interestedness, powers of concentration, command of language and expression, keenness of perception, type of memory, imaginativeness, reasoning ability, ease and faithfulness of association, etc.
2. Evidences of social differences between the pupils (i.e., differences in politeness, good behavior, conscientiousness, social adaptability on the playground, qualities of leadership, capacities of "mixing" well, seclusiveness, etc.).
3. Evidences of scholastic differences: differences of ability in specific studies, such as arithmetic, history, language work, drawing, etc. Does the pupil who is bright in one study appear to be bright in most or all the other subjects?

Some practical conclusions. We have now completed our brief survey of the field of heredity, and turn in this lesson to an application of the facts and principles discussed in the preceding five lessons to our work as students of childhood and as teachers. It should be reiterated at the outset that our knowledge of the principles underlying human heritage is at best scant and fragmentary, and that any conclusions which may be suggested by our present knowledge are subject to revision as experimentation advances along this fascinating line. It is probable, however, that the records of our racial and ancestral past are now sufficiently complete to warrant making the following summary.

Racial heredity. Nature never makes any mistakes in her breeding. Of this fact we may be assured. Whatever may appear upon the surface to be an abortion and an absurdity of nature will be found ultimately to be the result

of a very definite and doubtless a very wise natural law. In the wider aspect of racial heredity, one can catch something of nature's inexorable constancy in the faithfulness with which she fashions her children true to race and type and stature. For example, the child of the negro blood is unerringly black; the child of the white parent is unerringly white. In a similar way the children of all colors of skin continue and perpetuate the color of their racial forbears. Likewise with respect to physical characteristics which are fundamental. The height of human beings, we may believe, has remained tolerably constant for thousands of generations, as have also their approximate weight and girth. Any chance or unusual variation in the physical averages of human beings has in the past always tended in the next or subsequent generations to approach the mean, in accordance with the expectations of Galton's law of filial regression.

Physical aspects of heredity. Accordingly children should prove in the great mass of cases to be more like their parents in physical characteristics than less. Children of parents below the average height or weight should tend to be of lesser height and weight than they, but at the same time should be found to approach somewhat the type, or average. Occasionally, however, our calculations appear to be utterly upset. Now and again the son or daughter of parents of mediocre height will shoot up nearly a foot taller, while on the other hand those of parents of unusual height will be found less tall than the average. For such exceptions as these the science of heredity can offer as yet no thoroughly dependable explanation. Often, it is true, a child "takes after" his mother and not his father in the matter of height or features or complexion, etc.; often he "takes after" the latter rather than the former. Often, too, the child appears to be not a whit like either father or mother in any physical characteristic. In such case there are at least two possible sources of his variance with the parents. In the first case, he may have inherited a

"blended" character; i.e., one in which the characteristics of both mother and father appear to be commingled in him. In the second case, he may draw 100 per cent of his characteristics from neither mother nor father, nor from both together, but rather from some other ancestor, for example a grandfather or a grandmother, or perhaps an uncle or aunt, or some other member of the ancestral line.

Thus uncertain and baffling are the problems of heredity. Thus, too, you can understand how hopeless a task an experimenter or inquirer into the nature of heredity faces when he attempts to formulate mathematical computations and probabilities in this most elusive and apparently contradictory field. You recall from Lesson 23 that Galton ascribed a certain definite and constant amount of weight to the influence of the immediate parents, grandparents, *et al.*, in the formation of the natures of a child. You see now, however, that while Galton's law of ancestral inheritance may hold true, and apparently does, for the greatest number of cases, it does not explain the striking variations from type which one continually meets. One needs to remember always in his contemplation of the problems of heredity that every child has a countless host of ancestors, after any one of whom, theoretically, he may take any of his physical characteristics. As a matter of fact, however, it is probably rare that a child resembles to any great degree any one of his ancestors more removed than three or four generations.

Mental inheritance. In general, what we have said concerning the inheritance of physical characteristics applies equally well to the heritability of mental and moral characteristics. It is obvious, however, that the environment into which the child is born is of far more profound influence upon these characteristics than it is upon the purely physical characteristics, which are inborn absolutely, and which develop relatively independent of varying influences of environment. In general, then, you may expect the children whom you teach to be on the whole more like their parents than unlike them; but you may expect also that a consid-

erable number will manifest pronounced variations from either or from both. As a rule, ability in handwriting, or in linguistics, or in mathematics, or in some form of artistic expression, or in inventiveness and originality, etc., which is apparent in the child, may be assumed to have been present in his immediate ancestry, at least to a degree. Such abilities in a family line may be called "specialized" abilities. In like manner, a child who is disposed to neurotic tendencies, or to epilepsy or abnormality of any sort, is more likely than not to be the child of parents in whom similar deviations from the normal exist. It should be borne carefully in mind, however, that owing to the uncertainties of heredity perfectly normal parents may have markedly abnormal children, and hence the teacher needs to be particularly careful in passing mental judgment on any family from which a subnormal or an abnormal child happens to come. She will find not infrequently that, because of this same variableness of hereditary forces, of two or more children coming from the same family and the same surroundings one may be hopelessly subnormal, while the other or the rest may be unusually brilliant pupils. With the last mentioned the teacher can literally work wonders educationally, while before the former she stands all but helpless. Professor Walter expresses this truism happily thus: "A genius must be born of potential germ plasm. No amount of faithful, plodding application can compensate for a lack of the divine hereditary spark at the start."

Even between twins there are sometimes observable the most marked differences, either physically or mentally. The one may be retiring and modest in the extreme; or he may be dull at his studies, or slow of comprehension, or choleric in temperament. The other, child of the same parents, of the same age, and the product of identical pre-natal and post-natal forces, may be a leader in his group, brilliant in study, of happy, sanguinary temperament. The one may likewise be tall, the other short; the one stout, the other slim. All these and many other divergencies *may*

appear. The general rule, however, will hold; viz.: that children of the same family are more like than they are unlike. Thorndike found, for instance, upon measuring fifty pairs of twins in the New York City schools, that the resemblance between them was greater than between other children not so related. And yet it is quite possible, and often actually so happens, that one of the twins may draw 50 per cent or more of his character from one parent, while the other of the two draws similarly from the other. Or, again, the one might be possessed of a blended inheritance, while the other was not; or the two might draw any percentage of their respective characters from different ancestors further back than their immediate parentage.

The inevitableness of heredity. Enough has been said in the last few lessons to demonstrate the inevitableness of heredity. It matters not whether the ancestral line be one like that of Max Jukes, or Martin Kallikak, or whether, on the other hand, it be one like that of Napoleon, or Bach, or Haydn, its perpetuation in offspring of like characteristics is absolute. This simply means, applied to the average children with whom you will be thrown in contact in your everyday teaching, that children and parents are chips off the same ancestral block, whether that block be rotten or sound. This being true, the first limit which is set to your beneficent work as teachers is that set by the ancestry of those whom you would teach. It is impossible for the teacher to create capacities which are foreign to the hereditary stock of any child. She may labor incessantly and exhaust all the fine arts of her teaching methods; at best she can only provide a favorable setting in which the traits handed on from other generations may find favorable opportunity for unfolding in the present. Beyond this she is not able to go. The famous contention of Jefferson that all men are created free and equal should, in the light of heredity, read, "all children are born bound and unequal," for surely original nature varies in all of us.

This suggests the need of a larger amount of individual

work and attention devoted to all children in school. If every child differs inherently from every other child, it is the duty and responsibility of the school system to discover very early in the school life of the child any peculiar and promising traits which he may possess, or any marked limitations in capacity in order that the school environment may be so manipulated as to be made of the greatest possible advantage to him. At the present time, as you are aware, there are a great number of children to be found in almost all school systems who are distinctly below the average in mental endowment, and whose presence within any given grade operates to retard the progress of the whole group of children of average ability, to say nothing of the effect upon the progress of those few in the upper third of the grade whose abilities are marked. To such children the average teacher is compelled to devote an amount of time out of all proportion to their number and merits; or else she is forced to the opposite extreme and tends to neglect such children of meager equipment, in spite of the fact that actually those are the very pupils who stand most in need of every possible effort in their behalf.

Deviation from the normal. We have already referred to this principle of deviation from the normal, or average. In any group of adult human beings, for example, it will be found upon investigation that the great mass approximate a certain fairly uniform height, which we may call the average. But on the one extreme from the average will be a small percentage of the total number whose height deviates by several inches from the average, while on the opposite extreme will be found a relatively similar percentage whose deviation from the average is likewise several inches, *but in the opposite direction*. That is, for example, the average height of the mass of men may be five feet and eight inches; but there will be a few who are not more than five feet tall, with intermediate heights all the way up to the medium. There will also be a few who measure perhaps six feet and two or three or more inches, with intermediate heights again

all the way downward to the medium. This same principle holds true of mental capacities and abilities. The great mass of children in a given grade will perhaps rank around 90 per cent; at the same time there will be variants from this average down to 70 per cent, or 50 per cent, and perhaps much lower. A few children will rank at 100 per cent, or at 98 per cent, or 95 per cent, and will constitute distinctly a grade of intelligence well above the average. Of course it must be borne in mind that there are many children who are kept back from attaining their own maximum rate of progress from purely extraneous reasons, such as illness, or inability to use and understand readily the English language, or from related causes, and we must be careful to make allowances for all such possible circumstances in judging the innate abilities of children.

We might extend our application of this law of deviation from the average to every subject of study. Some children, for instance, will be very backward in arithmetic, while others will be unusually capable — the mass will fall midway between both extremes. So with most other studies, and not infrequently the same child who ranks as "excellent" in literature may rank as "poor" in mathematics, although such specializations of abilities in the common subjects of the elementary school are probably less often met with than might be supposed. Back of all these variablenesses and discrepancies of abilities in school children, more potent than environment, stand the inexorable laws of heredity. You can no more set them aside than you can set aside any of nature's laws: they can be mitigated to a limited extent, but never effaced or altered.

We have now looked sufficiently into the nature of heredity and its laws to be able to appreciate that there is no sharp line of demarcation which divides all children into distinct classes labeled "normal" and "abnormal," respectively. Rather the intricate possibilities of the germ plasm are such that one level of intelligence shades off almost imperceptibly into a lower level, on the one hand and, on the

other, into a higher one, until by slow gradation the two opposite poles of mental endowment are reached. The lower of these is intellectual zero, the higher represents genius. Without exception, the place occupied by any individual upon this scale depends upon his heritage or non-heritage of talent. We shall return to this subject in Lessons 41 and 42, when we shall inquire more specifically into the characteristics of dull and of brighter children.

TOPICS FOR SPECIAL STUDY AND REPORT

1. Is it according to your observation that children resemble on the whole their parents? Do you know of any marked exceptions to this rule?
2. Compute mathematically the number of direct ancestors you have had since 1620, allowing thirty years to each generation.
3. Do you know of any cases in which normal parents have markedly subnormal children? Can you explain such apparent inversions of natural law?
4. Do you know of any children who possess conspicuous talent in any line? Is there any immediate explanation of this in their parentage so far as you know it?
5. Study the origin of the normal probability curve. (Reference 3.)

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LESSON 28

TRANSITION TO LEARNED BEHAVIOR — ENVIRONMENT

What to look for in the observation period :

1. Evidences of the persistence in the children of bad habits of speech. Can you tell roughly the class of home from which many a boy and girl comes by their speech habits?
2. If possible, observe a lesson in reading in the seventh or eighth grades, and determine whether the story that is being studied is of a type that should naturally make an appeal to the interests of boys and girls of thirteen or fourteen years of age.
3. Are there any appointments or factors in the general environment of the school which you think might have an unsalutary influence upon the pupils? What are some especially fortunate moulding influences in the surroundings?

Heredity *versus* environment. In the preceding lessons in heredity it may have appeared that environmental factors seem to play only a slight part in the evolution of the child. It is necessary now, however, to turn to a more complete statement concerning environment, which after all is a highly important and significant factor in the development of every one of us. Within the meaning of the term environment are included all those forces in the external surroundings of the child which influence in any way his mental or physical or moral growth. Now if you will pause to consider the matter for a moment you will be compelled to conclude that there are very few things indeed in the world of the child which do not in some way have a bearing upon him. His home, school, playmates, church, all modify in some way his original nature and exert a pronounced influence over his behavior. Of two boys, for example, possessed of similar original endowments, the environmental forces of the one may exert such a profound

influence upon him as to cause him to develop into an altogether different individual from the other. The accompanying diagram (Fig. 7) illustrates what has appropriately been called the *triangle of life*. You will note that,

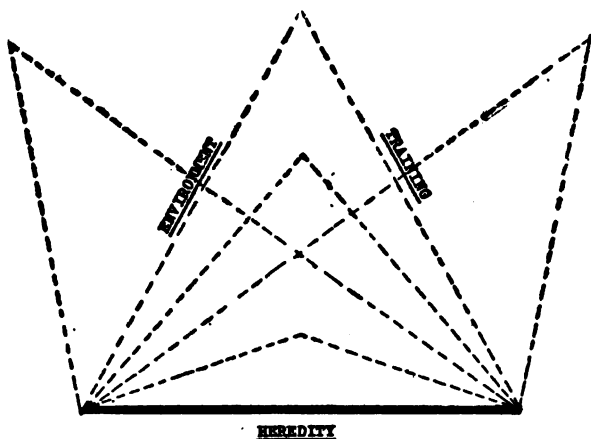


FIG. 7. THE TRIANGLE OF LIFE

Indicating how training and environment may operate to produce from the same hereditary stocks (or equivalent hereditary stocks) individuals strikingly different from one another. (Reproduced by special permission of the Princeton University Press from Conklin's *Heredity and Environment in the making of Men*.)

given an identical base (heredity) two or more individuals may unfold into widely dissimilar personalities because of the varying pressures exerted by the two side lines (training and environment). Thus, while we said in the last lesson that heredity sets the first limit of an individual, it is evident that environmental agencies may operate to evolve from like original natures unlike individuals within the same limitations. There is, however, much evidence to show that like qualities in original nature persist markedly regardless of differences in environment, and that unlike qualities persist regardless of sameness in environment.

The question has often been asked, which is relatively the more important factor in human development, heredity

or environment? This is a matter about which we need concern ourselves little. As well attempt to answer the question, which is the more indispensable element, water or air? Both heredity and environment are important agencies in the building up of an individual, and it is inconceivable that such an idle question should occupy the minds of teachers who are in search of dependable information. Possibly the only satisfactory answer to the question is to be found in the careful words of Sir Roger de Coverley: "Much might be said on either side."

Some important factors in environment. Let us examine some of the more obviously significant forces in the environment of the child which our own observation and experience inform us to be inevitable in their influence over young people generally. In the home, undoubtedly one of the most tremendous forces exerted over the child is the language which is used habitually. You will not be a teacher very long before you will make the discovery for yourself that the language used by your children is the language of their respective homes, and it is likely that you will struggle valiantly and sometimes in a seemingly losing fight to encourage your boys and girls to form the habit of making the appropriate substitutes for the omnipresent "ain'ts" and "hain'ts," and "ain't guts," and "hain't guts," and a score of other speech-barbarisms which sully the spoken word. Children coming from more or less careful homes where a reasonable standard of pure speech is the rule will inevitably use choicer language than those coming from homes where a mixture of purities and impurities of speech is the standard. Then, too, on the part of the home environment, the manners and habits of politeness and courtesy and obedience and the attitudes of mind and the tastes in dress and the attention to simple rules of hygiene are all of extreme significance in the development of the children. You will find in the same schoolroom the most glaring contradictions and inconsistencies in these several respects, and will at times be quite at a loss to secure the im-

provements which you desire in all cases. Obviously heredity plays a not inconspicuous part here, in that as a rule those children whose parents are the neatest or the most careful in their speech, etc., may be assumed to belong to better ancestral stock than do those children among whose parents the reverse is true. There are, however, exceptions to this, as to most other rules.

We have already discussed the gang instinct, and have seen that the influence exerted by one's "set" or group is of much significance. The child may come from ever so good a family, but, if he belongs to a bad group, the innate and instilled habits and attitudes and ideals are likely to suffer grievously. How many a life which has started with all the promise and glamour of happy, normal youth has ended disastrously in young manhood, and all because the influences into which it drifted were unfortunate! Outside of heredity alone there is probably no other force exerted upon boys and girls which equals that exerted by the company in which they move. Many parents in these days, when the call of the street is so insistent and enticing, are striving successfully to combat the influences of the street and of the questionable group by fitting up for their boys an attic chamber, or some room in the house which they can call their own, and where they can store all their choicest treasures, and where, too, they may receive and entertain all their boyish friends. There is no question as to the positive value of such a wise provision as this. Happy the boy who possesses such a *sanctum sanctorum* wherein he is monarch of all he surveys, and wherein he may do and play whatsoever he will, within the proper limits. There is probably no happier nor more attractive place than the boy's den in the whole realm of childhood.

The environment of the school, except in so far as the influence of the gang extends within it, makes up what we called the training side of the triangle of life, and as such we are not properly concerned with it in a book of this sort, which deals rather with *childhood* than with organized

methods of teaching childhood. There are two other forces in the environment of children which deserve special consideration at this point. These are the reading matter of boys and girls, and the amusements in which they indulge.

The reading matter of children. If you try to recall the interests of your own childhood you will undoubtedly find that one of the stronger forces which exerted a moulding influence over you was the reading which you did outside of actual studying. Probably you still recall one or two favorite stories, like *Little Women*, or *Little Men*, or some other tale which held you in fascination for hours as you followed the magical unfolding of it from the first page to the last. And it may be that after it was finished you regretted having read it so fast! Possibly, too, you have since reread the same favorite stories of childhood and have found in them ever-recurring pleasures which you did not before experience. Such is the spell created about one by a thoroughly enjoyable story!

It is but a step after all from your own childish interests to those of your children. The same wonderland of saga and romance through which you journeyed happily spreads before your own children, and they experience the same delights along the wayside as did you. What need for careful supervision is there in all this matter of reading! Not a day passes in which new books of the lighter sort do not appear fresh from the press. Some of them are good, some are bad: some are indifferent. Every child who enters the stage of late childhood is heir to a heritage in literature greater than that enjoyed by any child preceding. And yet how few children ever are really introduced to their heritage! Many a poor, famishing heart, beating fast in the breast of boy or girl, feeds upon the husks of literature. And many a broken man or woman looks back upon his or her early reading matter and denounces it as having been the strongest agency in their undoing.

But even though human life be not broken by trashy

reading, it is yet often limited and hedged in from a wider, freer universe by the sordid and the impossible and the absurd in what flourishes under the name of "literature." Often a young adolescent finds his views of life and his sense of values hopelessly distorted and overturned by the books which he devours. A new heaven and a new earth surround him, but the heaven is murky and the earth is unreal. Contrast with this adolescent the one who has been led by wise guides of childish steps and interests to enjoy the best things in literature, in so far as they are within his powers of comprehension and his range of interests. In the past we have had few school libraries, but they are coming to be a modern necessity to the end that there may be always before and available to one the best that the magic world of fancy has to offer children in every age. And there are an infinite multitude of such tales, graded according to the age and intelligence and interests of children. With them every teacher should be tolerably familiar, and no teacher has any right to stand in a schoolroom as a master workman who cannot pick out or recommend to any boy or any girl of any age a story book which will exactly suit the individual case. If you feel that you are not able to do this, by all means leave off reading the latest popular fiction until you have familiarized yourself to a degree at least with the available things in juvenile literature.

A word should be said, too, regarding children's magazines and periodicals. If a wise relative ever subscribed for you to one of the many available publications of this sort you can still recall the eagerness with which you looked forward to the regular weekly or monthly appearance of the magazine in order to discover what was recommended to be built or played, or to turn eagerly to the "continued story" which left off last month at the most interesting point, and to peruse it to its happy outcome. Many a day was made happier and many an evening more enjoyable by absorbing one's self in the pages of such magazines as these. Do you think you could advise a parent who might ask you what

are some of the periodicals which would be interesting to a boy of twelve, or to a girl of nine?

The conclusion of the whole matter is this: most children love to read; reading is a sort of pastime which transports one beyond the here and the now and extends his little horizon of home until it embraces the uttermost parts of the earth. Other lands and other scenes, other peoples and other children, other ways of living and of playing, heroes and heroines of the past, visions into the future, adventure and romance — all these exist in the printed page, ready to step forth at the word of command from the youthful magician. Coexistent with all these, however, are large numbers of books which instead of extending the horizon of the adolescent outward across the broad, open universe, delve rather down into the abysses and maelstroms and under-worlds and vortices of life, dragging with them the light, airy souls of boys and girls which were meant rather to soar aloft than to be contaminated with the pollution of social dregs.

Amusements. Everybody must relax. After periods of storm and stress in work there must inevitably succeed periods of recuperation in which the organism seeks release and relief. Undoubtedly the healthiest form of relaxation is that which finds its outlet in physical expression of some sort, or at least in mental rivalry such as in games and sports. We have not the space here to enter into a discussion of the various kinds of amusements in which children seek their relief from work, but one form there is which cannot be lightly set aside as an environmental force for good or for bad upon every child participating. I refer to the general motion-picture theater. From the very nature of human life and relationships of the present day it is inevitable that amusement should be sought in theaters, either orthodox play theaters or motion-picture theaters. It has been estimated that once in four weeks every man, woman, and child, on the average, in the United States attends the moving-picture theater, not to mention the number in the mean-

time attending the orthodox theater. Here is, apparently, a form of amusement which is attractive and compelling. Watch, if you will, the young child, boy or girl, who chances to have a bright nickel and a stipulated amount of time on his hands and you will see him hovering about the lurid posters outside the cheaper theaters in an endeavor to decide which of the possible theaters offers the most for his money! Finally, having made his decision, in he goes and becomes at once one of a great number of other children and adults whose eyes are fixed upon the wondrous presentations on the screen, and from whose minds the whole outer world is for the time being quite shut out. Everything is oblivion save the animated scenes before one.

Now there is in all this a danger. The mind of the child is very impressionistic, easily influenced toward the good or the bad. The new and strange things which he sees depicted upon the screen excite his imagination and furnish him food for thought long afterward. Of course if all motion-picture films offered were intended primarily for children it would be a relatively easy matter to so regulate them as to make them at least harmless. The moving-picture theater is, however, an institution intended primarily for adults, and for that very reason offers many moral dangers to the children who are always to be found there. The average adult theatrical taste has been so long outraged that unusually passionate depths or emotional or suggestive themes must be touched in order that a picture may be creditably received. The influence of such films upon the suggestible and omnivorous minds of the children cannot but be destructive. Adult relationships and "problem plays," and improper situations thrown objectively before the fascinated gaze and eager mind of the child upon the screen make at best poor sustenance for the unfolding mental and moral life of a child. "This portrayal of vice, of depravity, of drunkenness, of murder, of brigandage, this premature exposé of adult passions, adult lust, adult vengeance; this wresting the lid off the dregs of society, this

unveiling, as it were, of the tree of life, can but be too suggestive of emulation and imitation to boys and girls the very earmarks of whose souls is the zeal to imitate and emulate." And yet it should be remembered that in the moving picture properly censored and edited, society has a tremendous ally in the training as well as the amusing of its children.

TOPICS FOR SPECIAL STUDY AND REPORT

1. Collect and bring to class for discussion as many illustrations as possible to show the influence of the home environment upon the speech, or manners, or habits, etc., of children.
2. Do you chance to know of any boys whose parents have provided "dens" for their exclusive enjoyment? What has been the effect of this provision upon them, so far as you are able to determine?
3. Observe if possible and report the type of story which you find any child to be reading. Can you determine how he reacts to the story?
4. What experiences have you had which would tend to show the interest which children have in moving pictures? The effects of patronizing such forms of entertainment upon them?

THE LESSON APPLIED

1. President Eliot made the statement many years ago that the readers ordinarily in use in the schools are highly unsatisfactory. Can you think of any explanation of such an opinion, if true? Has it been your own personal experience in coming up through the schools that the natural craving of children for reading material has been satisfactorily ministered to by the school reader?
2. What is your reaction to the following condition of affairs, which is by no means an unusual one in many of the smaller schools of our country:

In a certain country school there were recently four children who were deemed by the teacher to be sufficiently advanced in "reading" to comprise the "first class." Consequently, at the beginning of the school year the four were put into the "eighth reader." The book comprised some thirty selections of prose and verse. The class "read" five times a week. At the end of some six weeks the book was completed. What then? For the remaining thirty or more weeks of the year the identical book was read and re-read, until the four must have known by heart every selection it contained — and hated them as cordially!

3. Would it be possible, following out Dr. Eliot's suggestion, to introduce into the schoolroom "real literature," carefully adapted to the age

and natural interests and likings of the children? Has this already been done in many school systems?

4. The author was at one time a teacher in a system where the orthodox "reader" was still used. Believing that boys and girls should become passionately fond of the best in literature, according to their natural preferences, he consulted with the superintendent concerning the possibility of discarding the "readers." He was curtly advised by his superior that "readers" were the books that were provided, and that "readers" must be used. What would you have done in such a situation: would you have permitted the desire for good literature to die in a score of boys and girls, or would you have found a way — as the writer did?

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3. Thorndike, E. L. *Educational Psychology*.

LESSON 29

HABIT

What to look for in the observation period:

1. Any evidences that some children are more plastic, i.e., more readily responsive to school influences, than are other children.
2. Illustrations of the physical plasticity of children, as illustrated in round-shoulderedness, unsymmetrical development, bow-legs, or other postural defects.

Learned *versus* unlearned behavior. We have now completed our survey of the field of unlearned behavior and turn our attention from *nature* to *nurture*, from the inborn potentialities of the organism to the acquired powers and attitudes which come about as the result of experience. We have seen that the lowest form of unlearned behavior possible to living organisms is the tropism; that the next higher forms are the automatic and reflexed acts which regulate more or less our physical life; and finally, that the highest form of unlearned behavior is the instinctive activity which we have discussed under some dozen or more heads. Having enumerated and discussed some of the more important instincts we paused for a few lessons to inquire into the nature of heredity, which is likewise an inborn force. Taken together, all these automatic and reflex and instinctive forms of behavior, plus all the contributions made to an organism by heredity, comprise what we have called the *original nature of man*, or *unlearned behavior*.

Suppose, however, that the child of original nature should remain throughout his life unmodified by the moulding and shaping and directing forces of environment and training; suppose no infant were able to perfect or control or transform or sublimate his instincts; suppose the compulsions of an unfortunate heredity could not be in a measure miti-

who often takes a two per cent solution of the same substance before making a single grimace.

The sense of *smell* is one of the slowest to be evolved. Miss Shinn thinks that not until the tenth month of life does there begin to be any spontaneous activity of this sensation. Strong, odorous substances persistently experimented with will usually provoke a distinct reaction of unpleasantness, or the reverse, but so far as actual spontaneous exercise of the sense is concerned it appears that such exercise is rarely found in children during the first half year at least.

Of the threefold aspect of the sense of *touch*, it may be said concerning the temperature sensations that variations in the temperature of the nursery are not noticed unless such variations be sharp: coldness is more quickly responded to than warmth; concerning the sensations of surface pain it appears that, while it is not easy to experiment upon infants, sensitivity to pain is extremely low during the first days of life. Slight surgical operations would indicate this to be true, as would also certain experiments which have been performed by enterprising inquirers such, for example, as Genzmer. This investigator actually used the needle-prick upon fifty babies and concluded that for a considerable period after birth there was present no sensitivity to pain. It is possible, however, that more extensive stimuli, such as pinches and slapping that would stimulate a larger number of nerve endings would elicit manifestations of pain. The third aspect of the tactile sense, touch proper, evolves also somewhat slowly, except in the case of the areas contiguous to the mouth and eyes, which manifest sensitivity to touch from the very first. Upon other areas of the skin, however, the response is at best dull during the first few days, consisting largely in a vague "feeling of general comfort in being cuddled."

Organic sensations in infancy are not easily determinable. It appears that sensations of thirst and hunger are present very early — perhaps after the second or third day. And

with much of the beautiful and the majestic and the artistic which make it the more worth living.

Earliest sensations of infancy. We said above that there are seven different doorways into the mind of the child. Let us now endeavor to understand how it is that those several doorways are pushed ajar and afterward opened wide to the inpouring of sensations. First, the sense of *sight*. In the earliest days of infancy there is very little sensitiveness to light, although it is probable that from the very first day the infant is vaguely conscious of light stimuli. Extremely bright lights appear to cause it discomfort, and dazzling lights are probably actually painful to its weak eyes. Mild light causes general contentment and, from about the third week on, its eyes are attracted to bright surfaces, such as sunbeams on the floor, or the patch of reflection from the lamp upon the ceiling, or even the face of the mother. Contrasts of brightness and darkness are likewise dimly appreciated from about this time. It appears from the studies which have been made of infants that any notice of color lags somewhat behind the inception of sensations of light proper. Miss Shinn's niece was attracted on the 23d day to a red kerchief which it appeared to watch with considerable delight. In general we may assume that sensations of light contribute little more than a vague feeling of satisfaction to the infant previous to the attainment of its third week of life.

Hearing is probably absent altogether for the first two or three days, coming into some prominence only in response to sharp auditory shocks which are sufficiently loud to compel even the sluggish nerves of hearing to respond.

The *taste* sense is rudimentary at birth. Various strong tasting substances have been placed in infants' mouths, such as camomile tea, cod-liver oil, soda mint, aromatic spirits of ammonia, etc., all of which are in most instances swallowed like so much water. Even a one per cent solution of quinine, which adults find strongly bitter, fails to call forth any symptoms of unpleasantness in the infant,

who often takes a two per cent solution of the same substance before making a single grimace.

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yet, strange to say, if a rubber nipple or other small object be introduced into the mouth of the infant who is apparently fretful because it is hungry, it forthwith manifests symptoms of satisfaction and contentment. Organic pain is likewise probably felt early. You have no doubt often remarked when you were caring for the baby the distinctly different forms of crying in which it indulged: the hunger cry differed from the indigestion or colic cry, and the latter from the fatigue cry. This would indicate somewhat distinct sensations from the internal organs.

The *kinæsthetic* sense, too, is in evidence from the first day or so. One investigator found a two-day-old boy starting distinctly when the scale of a balance in which he lay fell down quickly and with a jerk. Babies are usually rather sensitive to jarring and to being tossed aloft. They also become easily fatigued from lying long in one position, which fact would seem to indicate the presence of muscular sensations from the back or shoulders or limbs.

Developments from these crude beginnings. Out of these crude and uncertain beginnings all the keenness of eye and ear, and all the discriminations of taste and smell, and all the lightness and deftness of touch, and all the fineness of muscular coördination and balance are to be evolved! It would seem that nature has a difficult task upon her hands. But no! Almost before even the mother knows it the child's senses are so sharpened that there is nothing objective in its entire surroundings, indoors or out, which does not have to be explored in order that its mysteries may be yielded up to the omnivorous senses of the young discoverer and adventurer in a world filled with innumerable things to challenge and entice.

The child lives in a world of sensation. By the time the infant has reached his first birthday he can ordinarily toddle about by himself, and from that time on whatever of its secrets the world has not yet yielded up to him are speedily investigated. As infancy shades off into early childhood the entire atmosphere in which the child of nature lives, moves,

and has his being is one of ever widening sensation, coupled of course with growing perceptive keenness. And as early childhood passes over lightly into later childhood and with all the attendant sharpening of the senses, the charming search after new and ever new experience becomes more and more seducing. Think, if you will, of the flying swing and the whirling merry-go-round, and the bicycle-riding, and the search after new shells and new stones and new leaves, and the craze for pictures and stories of adventure, and the swaying in wind-tossed trees, and the craving for sweets and candies, and the delight in screeching whistles, and the impulse to handle and pull apart and build up and manipulate and a score more experiences of the senses which make the world of childhood the world that James has so aptly called a "great, blooming, buzzing confusion." All of these interests are satisfying to the child because they appeal to his thirst for sensation. It is as though nature knew that her child would be in need of a vast fund of sense experience upon which to build up his later thought processes, and took this easy and compelling way to lay such a foundation for future progress. Can you think of several other forms of sense experience which children willfully and spontaneously seek?

TOPICS FOR SPECIAL STUDY AND REPORT

1. Look up the technical names ordinarily applied by physiologists to the first five senses which we discussed.
2. Observe an infant for a few moments in order to discover any facts concerning the operation of his sense organs. If he is but a few days old try some simple experiment upon his vision, or other sense; if an older baby, note his keenness of sense interpretation; if a still older child, try to observe something of the pleasure which he derives from the ordinary stimuli which pour in upon him through one sense or the other. Report your results in class.

THE LESSON APPLIED

1. From the viewpoint of efficient sense organs, what is the value of a thoroughgoing system of school medical and health inspection?
2. Is there any justification in the schoolroom for systematic training

of the senses, or will the evolution of sharp senses come about indirectly through the play and other interests natural to childhood?

3. Would you expect a child brought up in closest contact with an environment rich in appeal to the senses to be capable of more intelligent participation in the educative process than another child of similar native ability but brought up in an impoverished environment where sense appeal was slight? In general, should a city or a rural environment be the better place in which to rear children?
4. Upon which of the senses is school work most dependent? Which is the sense most likely to be impaired? Is there any causative relationship between application to school work and impairment of this sense?
5. What precautions should be taken by a teacher to make it possible for the nearsighted or slightly deaf children to participate to the maximum of their ability in the work of the school?

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4. Shinn, M. W. *Notes on the Development of a Child*, especially vol. 2. (To be used largely for reference purposes.)

LESSON 33

PERCEPTION

What to look for in the observation period:

1. Evidences of the perceptual keenness or dullness of individual children. Are some more keen than others? Why? Is a child sometimes a keen perceiver in one situation, and quite the reverse in another?
2. To what extent the teacher makes it possible for appeal to be made to more than one sense organ. Is there greater possibility in this respect in some subjects than in others? In what subjects are the possibilities greatest? Smallest? In what grades especially does the teacher emphasize this wider appeal? Why?

Definition. We said in our last lesson that as soon as a sensation had succeeded in arousing meaning, or associations, it ceased to be primarily a sensation and became a *perception*. It is true that even after you have recognized the red book to be a red book, its qualities of redness and size still continue to be present to your mind, but your mental experience is rather concerned with what the object is than with what its qualities are. A perception is therefore the result of the unifying character of past experience brought to bear upon the present sensations. Your perception of any object is your answer to the question, "what is it?" You have, for example, a perception of the printed page before you, or of the picture hanging on the wall, or of the hissing radiator, or of the odor from the vase of flowers, or of the smooth velvet upon your dress, or of the friend studying by your side. All of these possess a meaning to you; all of them, too, are interpreted or understood as they are because of your past experience with them.

Perceptive powers of the child. But these same objects would have a totally different meaning to the infant. They would fall upon his senses as a more or less discordant and

indistinct series of stimuli which he would be quite at a loss to assign any meaning to. The infant's mental life is a jargon of seemingly unrelated and unintelligible events. He has not learned to bring mental order out of this sensory chaos. To him it is all James's "great, blooming, buzzing confusion," without significance and without purpose. He is living in a world of haphazard, topsy-turvy, upside-down feverishness in which Brobdingnagians and Lilliputians and their effects and belongings totter about in endless disarray and disorder. True, he watches them, he listens to them, he feels them, he even tastes and smells them, and yet they possess for him as yet no meaning. Fancy yourself if you can being suddenly transported into some super-world wherein everything is wholly new and wholly distorted, and you will appreciate better the mental state of the infant as it contemplates its little world.

But as the infant grows older, slowly, very slowly, the universe about him begins to yield up its mysteries, although in amusing, fantastic forms often. With every additional day of his life he becomes able to answer the absorbing question "what is it?" with respect to a great many objects and situations, although still the mysterious world stretches away in a mist before him. We said in the preceding lesson that the child lives in a world of sense experience; that is true, and to the end that with wider experience and new sensations he may the better come to be familiar with that world. If you can imagine a child in whose breast there was none of this impulsion to explore and investigate and try out and experience, it is very evident that the number and faithfulness of that child's perceptions would never approximate those of children who normally search diligently after wisdom in the form of new experiences and new emotions and sensations.

Earliest perceptions of infancy. Naturally the earliest experiences which the infant consciously has are those which center around the food taking process. Very likely the first things in his environment which he may be said to

perceive — i.e., *know* — are his bottle and the movements made by the mother to satisfy his hunger. The perceptions of the first days of life are those apparently which depend upon the sense of sight and, to some extent, hearing. As the days pass, however, the infant's eyes and ears become sharper it is true, but are aided gradually in their seeking after knowledge by the evolution of the other senses. You can deceive the infant with camomile tea, or with a solution of quinine, or with the point of your finger placed between his lips, for a season, but soon he will be in a position to refuse all of these deceptive things and will accept only his proper food. All this is because he has learned to *recognize* the taste of milk. So with his other senses. Take the touch perceptions, for example. You can take away the bright, shining watch from the baby's fingers and substitute for it some less delicate plaything, but before you have done this many times the infant will refuse to take delight in the substitute and will demand the original shiny object: *he is learning to know*.

After all, however, the world into which the child has been ushered is so completely filled with strange and wonderful things that information about them all is well nigh a hopeless task. Consider, for example, the case of the baby's own hand. Possibly you have watched an infant when he first became interested in the fact that he possessed a hand. For several seconds it may be he turned it about, peered at it with his unsteady eyes, felt it over with his other hand, wriggled the fingers, perhaps stuck them into his mouth — and all this because he did not know that it was a hand and certainly did not even know that it was attached to himself, nor even that there was any *himself*. By dint of experience and use and perhaps slight injury to it, however, he came soon to understand what its purpose and identity were. It is only in some slow, chance way such as this that the child succeeds ultimately in ordering the chaotic world around him and informing himself concerning its contents. But then, too, so many of these

strange, unfamiliar objects appear to change shape or form or character at different times that even though the child has learned something about them, all his previous information seems worthless in the light of his next observation of them. Take your own perception of a simple table, for example. It looks quite different when you observe it from an angle from what it does when you look squarely at it from the front or side. If you have ever tried to draw a table from the object itself, you can perhaps appreciate this truth better. But if your own perception of a table varies with your viewpoint, what must be the case with the infant's perception of the same object, who sees it now from underneath, now from his mother's arms, now half enshrouded in its cloth, now quite bare?

Thus, not only are the child's sense organs tardy in affording him accurate information about the things around him; the fact that so many objects undergo modifications or transformations complicates matters all but hopelessly. Miss Shinn, for example, writes thus of the surprise of her six-months-old niece at beholding her grandmother's head from behind instead of from in front, as had been customary:

Later the same day she sat in my lap watching with an intent and puzzled face the back and side of her grandmother's head. Grandma turned and chirruped to her and the little one's jaw dropped and her eyebrows went up in an expression of blank surprise. Presently I began to swing her on my foot, and at every pause in the swinging she would sit gazing at the puzzling head till grandma turned, or nodded, or chirruped; then she would turn away satisfied and want more swinging. . . . At first amazed to see the coil of silver hair and the curve of cheek turn into grandma's front face, the baby watched for the repetition of the miracle till it came to seem natural, and the two aspects were firmly knit together in her mind.

Such is the confusion resulting from different points of view in the mind of the uncertain child!

As many senses as possible appealed to. If you have ever observed a baby during one of its investigative moods — and in a sense every mood of the healthy infant is an

investigative one — you have probably marveled at the variety of sources whence it sought its information. Suppose, for example, that it were engaged in endeavoring to get some sort of satisfactory understanding of its rattle. Among the various things which it did was to look the rattle over carefully, examining it with much intentness (vision), shake it violently and listen intently to the sounds produced (audition), certainly introduce it into its mouth (gustatory sense), handle and pull and twist and finger it (tactual sense), and very likely end by throwing it with all its might upon the floor. You were doubtless much amused to watch it, and perhaps picked the rattle up and returned it to the outstretched hands of the infant merely to observe what it would do next. If so, probably you found that it repeated its previous performance more or less exactly. What is the infant doing *really* by all this manipulation of its rattle? Merely finding it out, ferreting out its secrets, learning its mysteries, endeavoring to *perceive* it. And this is but typical of the spontaneous-learning method employed by all normal children, whether the object studied be a rattle, or any other toy, or any objective matter in their environment. The child learns, in other words, by *appealing to as many senses as possible* with every new and unfamiliar object. Even the cat is perceived as the cat only after much experimentation on the infant's part, in which vision, audition, touch, and perhaps muscular sensation have each contributed its share of information to the child. From a vague, moving mass seen now here, now there, a cat becomes by degrees a more or less familiar playfellow.

A delightful age. Nothing makes early childhood any more fascinating than does this thirst after perceptual information on the part of every child. You have observed something of this deliciousness no doubt in observing the baby trying to make friends with its own reflected face in the mirror, or talking to a flower or a stone or tree as though it were endowed with life, or quaintly and naively remark-

ing upon topics of conversation discussed by parents. The following is a quotation from Dr. G. Stanley Hall's famous study of the contents of children's minds on entering school, or, in other words, of the percepts and concepts of children of school age. It was a study made of Boston school children, the method being to ask those children entering the primary grades what they knew about certain supposedly familiar conceptions.

Skeins or spools of thread were said to grow on the sheep's back or on bushes, stockings on trees, butter to come from buttercups, flour to be made of beans, oats to grow on oats, bread to be swelled yeast, trees to be stuck in the ground by God and to be rootless, meat to be dug from the ground, and potatoes to be picked from the trees. Cheese is squeezed butter, the cow says "bow-wow," the pig purrs or burrows, worms are not distinguished from snakes, moss from the toad's umbrella, bricks from stones, etc.

What wonder that the investigator concluded that "there is next to nothing the pedagogic value of which it is safe to assume at the outset of school life." But even though all this is fascinating, it points to a serious defect in the early training of children. How poverty-stricken are most modern environments of childhood! What can there be in a city block or flat, and in the narrow, sordid streets of the city, or the level, monotonous landscape that can satisfy the natural craving of the child for perception and conception? For experience and information?

Perceptions of space and time. Who of us has not smiled at the absurdities of judgment as to time and space in children? The infant holds out its arms across limitless space as though to grasp the moon; it reaches for the sunbeam on the floor; it bends its body forward as though it could reach the toy on the rug at the other side of the room. So with time: telling the time of day is a hopeless puzzle for months and even years. Told to return home in an hour, the child has almost no notion of the limits of an hour. Minutes and hours and weeks and years are alike unintelligible to the younger child as measures of time-ex-

tent. But as they grow older, and acquire ever more and more experience with space and time-extent, their concepts become more lucid and their judgment of their extent and duration more accurate. So, as we have seen, with the increase in accuracy of every percept, and, as the perceptions multiply in number and increase in dependability, obviously the conceptions become likewise nicer.

TOPICS FOR SPECIAL STUDY AND REPORT

1. Distinguish clearly between a sensation and a perception.
2. Observe an infant for fifteen minutes, making special note of any of its perceptions which appear to be tolerably dependable, or of any which appear still to be wholly inadequate.
3. How does a *conception* differ from a *perception*? Illustrate the mental process whereby a child is able to build up a concept of *table*.
4. Distinguish clearly between a perception and an idea.

THE LESSON APPLIED

1. If pupils are to form correct perceptions — for example, in drawing, arithmetic, language, etc. — what should be true concerning the practice which the schoolroom furnishes them in their study of these subjects?
2. It is a common maxim of pedagogy that instruction in any subject must proceed from the known to the unknown. How does this law arise out of the orderly building up of perceptions?
3. Previous to the time of Pestalozzi (1800) education was based largely upon the textbook and the lecture methods. Pestalozzi insisted upon the necessity of direct object instruction wherever possible. Wherein lay the virtue of his contention? How has the application of this principle by teachers since Pestalozzi's day operated to revolutionize educational methods?
4. What are some common practices in modern schools that tend to give children definite and concrete experiences and hence clear and accurate perceptions? (Cf. especially such subjects as geography, arithmetic, nature study, science.)
5. If Dr. Hall's conclusion as stated in this lesson is true, to what deficiency or lack in pre-school training may be attributed the surprising undependability of the perceptions of school entrants?

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LESSON 34

ATTENTION

What to look for in the observation period:

1. Evidences of the fluctuation of children's attention. Do you note any gain or loss from grade to grade in degree of ability to attend?
2. Whether all the pupils are equally attentive to the lesson. If not, can you suggest possible explanations of individual variation in this respect?
3. Any special devices employed by the teacher to stimulate flagging attention. Do you note differences in the ability of teachers to secure and hold the attention of children?

Definition. Attention may be defined as the power of the human mind to *select* those stimuli among all the hundreds of other possible ones upon which it shall be focussed. Or, we may define attention as the ability to focalize a given object or idea in consciousness. You are able, for example, to attend to a picture, or the ringing of a bell in the church tower, or the odor of roses in the garden, or the taste of the grape, or the feel of velvet, or the disagreeable internal symptoms of indigestion, or the muscular twitchings of a fatigued hand. Any one of these objects or situations you may select out of your surroundings at any given time and pay attention to it. Or you may even pay attention to abstract ideas which you have formulated as the results of a great multitude of past experiences. You may compare and weigh these ideas in what we term reasoning, and in this last-mentioned process lie the highest possibilities of attention.

Attention fluctuates. Attention is not a static thing, even in adults. Still less is it so in children. The things to which we pay attention are continually changing. Suppose, for example, you are sitting at your study table hard at work upon some school task. Let some one open the

door, or speak your name, or let a cry of "Fire!" be raised in the street below, or let the radiator suddenly begin to hiss with escaping steam, or let some fleeting digestive pain rise into the level of your consciousness, and immediately your attention shifts from the task at hand to the interposing stimulus. It will perhaps require an act of will power to enable you to return to the lesson. And even the lesson itself is continually changing, as now one point, now another is stressed. How impossible it is for one to read any tale in which there is no progress, no action, no change to stimulate our attention! And how much easier it is to read a story in which the rapidity of the action and the appealingness of the plot and situations hold our attention to the very last line, and the very last word. The nature of our consciousness is such that it is ever surging along like the waves of ocean to new facts or new aspects. Professor James speaks of consciousness as a *stream* in which now this idea, now that is borne aloft on the crests of the waves.

The accompanying diagram will illustrate the ease with which one group of ideas, or one train of thought, is displaced by another group. The ideas *A, B, C, D*, etc., represent what we may term the *fringe* ideas in our minds at any given instant, while the central idea *X* represents the main idea to which we are attending, and to which may be

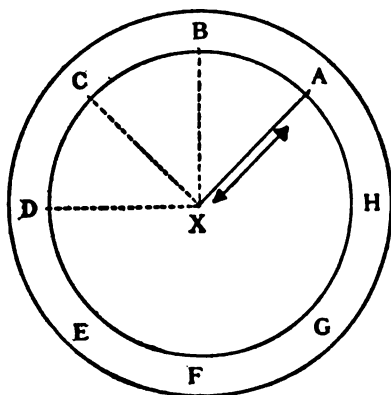


FIG. 8. THE FRINGE AND FOCUS OF CONSCIOUSNESS

X = the focal idea at any given instant; *A, B, C*, etc., represent various fringe idea groups lying just below the threshold of consciousness. Idea group *A* may succeed in dislodging *X* under the conditions explained in the text

given the term *focal* idea; i.e., the idea in the foreground or *focus* of consciousness. Let *X*, for example, represent the train of ideas connected with the studying of the lesson referred to a moment ago. You are engaged in unraveling the meaning of an especially difficult page or paragraph, in the interpretation of which all your mental powers are engaged. But now, suddenly let idea train *A*, which is nothing more than a dim consciousness that some one is talking in the next room, be intensified by that same person calling aloud your name, and immediately idea group *X* flees away from the focus of consciousness and idea group *A* springs in to take its place. Or, again, suppose the hissing of the radiator is suddenly violently increased. The same thing happens: your focal idea group *X* yields place to the fringe idea group *B*, which is your vague awareness of the noise of the radiator, and *X* and *B* exchange places.

It may be said, then, that if it were possible to take a snapshot of our mind at any given time we should find the resulting negative to be similar in structure to the diagram. Some central idea group upon which we were working or about which we were musing would occupy the focus, while in the background would be clustered probably several somewhat related idea groups which would represent the fringe of the negative. And any one of these fringe ideas is actively striving to drive out the focal group and supersede it; the latter retains its place in the foreground only because the intensity of the fringe stimuli is weak, or because we are spontaneously interested in the focal chain, or because by the conscious exercise of our will power we force ourselves to hold to the matter in hand. But even in the last two cases we shall not succeed in shutting the fringe group out *if that group chances to become too insistent*. In a sense we are somewhat at the mercy of compelling stimuli, and the function of choosing to what we shall attend is therefore partially limited by circumstance.

We said above that even the focal ideas are continually changing their aspects or points of view. If you will try

this simple experiment, perhaps you will come to appreciate the necessity for such constant changing. Look fixedly at the numeral XII on the clock for several minutes, endeavoring to allow no fringe ideas to exclude the focal idea — the figure XII. You will probably discover that for a second or two your eyes remain firmly gazing at the XII, but that very soon you catch some such idea groups as these leaping momentarily into consciousness: "It is exactly 10 o'clock"; "but I must look at the XII again"; "I wonder how long I have been looking?" "No, I must look only at the XII"; "the clock is round"; "my next class is in . . ." "But here! I am thinking of something else." And so your thoughts travel along on the waves of consciousness, now bringing you back to the original *X* idea group, now bearing you far away from it. Thus, if a stimulus does not change or vary you cannot possibly attend to it steadily. The waves of the stream of consciousness must go on and on. Nothing can check their progress, and only by exerting voluntary will power are you able to redirect the surging stream back anon to *X*. It does not matter what is the nature of *X*: it may be the figure on the clock, or it may be a picture, or it may be a problem in arithmetic, or a moral decision; in order to attend to it at all, it must either be changing *in itself*, or else our own associations which it calls up must flow on and on. Naturally attention is easiest to focal idea groups which change in themselves; it is easy, for example, to pay attention to a motion picture, or firemen on the roof of a burning building, or a musical melody. It is much more difficult to attend to an object which in itself does not change, *because the initiation and direction of our attentiveness is subjective*. The latter situation is at odds with the law of inertia; the former is in harmony with it.

We have noted, therefore, two aspects of adult attention. In the first place, the attentive state includes both focal and marginal idea groups; and in the second place, these groups must continually be in flux, resembling the crest and the trough and the succeeding crest of the waves.

Three kinds of attention. There are three different kinds of attention, or three situations in each of which we pay a different form of attention according to the stimuli which call it forth. They are (1) involuntary attention; (2) non-voluntary, or un-voluntary attention; and (3) voluntary, or forced attention. Let us discuss each of these in order.

Involuntary attention. In the example given above you will recall that we allowed *X* idea group to represent the page in the textbook upon which your attention was focussed, while idea groups *A*, *B*, and *C* represented fringe groups, such as low, indistinct talking in the next room, the hissing of the radiator, etc., all of which latter you were vaguely conscious of as making up the sum total of your consciousness. Now, when the talking increased in intensity and volume, and you chanced to overhear your own name called by some one of the group, immediately idea group *A* (the talking in the next room) forced *X* from the focus and darted itself into the foreground of your attention. In other words, you paid *involuntary attention* to a stimulus. You could not help allowing the thoughts of your lesson to lapse, and perhaps springing up and hurrying into the other room to join in the conversation. Involuntary attention may therefore be defined as attention which we pay because we cannot help it. More accurately speaking, we pay involuntary attention whenever a *novel, or intense, or sudden stimulus* strikes upon a sense organ and so dislodges the focal ideas in mind at the moment. Other illustrations of involuntary attention would include, for example, attending to a sudden explosion, or a sharp flash of lightning, or the cry of "Fire!" or an odor of escaping gas, or a sudden sharp cramp, or a cut finger, or a piercing scream, or any other stimuli which force themselves into our stream of consciousness. Think, for example, of the crowd on the street attracted to a police patrol or to an accident. Think of the many-colored and changing electric-light signs and the cleverly arranged ad-

vertisements which are designed to catch the eye and so arouse in focal consciousness an awareness of the significance of the advertising. Can you extend the list of stimuli which invariably drive out present thoughts and substitute for them others totally different in nature?

Non-voluntary, or spontaneous attention. Contrast with this sort of compelled attention another kind of compelled attention, but compelled subjectively rather than by the intensity of the objective stimuli. Non-voluntary, or un-voluntary, or spontaneous attention is that attention which we pay to an object or process or idea group *which possesses for us an inherent and personal interest or appeal*. A very interesting story, for example, we attend to because it does interest us. Nearly every person has some particular sort of story which he likes best. Some of us like romance, others adventure, others historical tales, others railroad stories, etc., and we prefer them because we possess a spontaneous interest in such situations as may be expected in these several varieties of yarns. Other stimuli which arouse our spontaneous attention include such things as seeing something about *us*, or *our school*, or *our friend* in the newspaper; picking out the violin from the other instruments in the orchestra because *we* play the violin; turning to the "woman's page," or the sporting page, or the children's page of the newspaper, according to our interests; watching the amusing behavior of the baby on the car, because we are interested in children; or noticing the new coat styles because we wish to buy a new coat, etc. In other words, spontaneous attention is that attention which we pay to such experiences as appeal personally to our own circumstance or condition or longing in life. Can you supply other illustrations of this type of attention?

Voluntary attention. When you were engaged in focusing all your energy upon the lesson which you were studying it is probable that you were making use of voluntary attention. You were paying attention to the *X* idea groups, not because they were presented to your senses

in some startling way (involuntary), nor perhaps because you had been led by a personal interest in the subject matter to familiarize yourself with it (spontaneous). Rather, you attended to the lesson because you realized that the mastery of it was expected of you, and you would suffer social disfavor and injured pride if you came to class to-morrow and were obliged to confess that you did not have your lesson. We may define voluntary attention, therefore, as the sort of attention which we pay as the result of *exercising our wills*. We *voluntarily* (Latin: *velle, to will*) select such idea groups as are concerned with the lesson and exclude all other groups from our minds. It may be that spontaneously we should have chosen to read an interesting story, or go to the theatre, or pass the evening with a friend. But our knowledge as to the fitness and appropriateness of things prompted us to apply our minds to the book rather than allow ourselves to do other more interesting matters. Other illustrations of the voluntary type of attention may be observed in such situations as the following: listening to a very uninteresting speaker; studying a railway time-table, in order to locate a particular train; settling down to work after an hour of social relaxation; copying in ink an exercise previously written with a pencil; participating in a lifeless conversation; searching for a number in the telephone book; making a decision between two possible lines of action, each of which is equally unattractive. The purpose of voluntary attention is therefore to win for ourselves results in attainments or reputation or abilities which are necessary to our present or future well-being. It is apparently the most difficult form of attention to pay because it is the only one of the three forms which requires marked mental effort in order to bring it to pass.

In our next lesson we shall apply all these general facts about attention to the attentive powers and processes of children.

TOPICS FOR SPECIAL STUDY AND REPORT

1. Select some small object, such as a tiny figure in the wall-paper, and endeavor to pay attention to it for two minutes. Write down the results immediately afterward.
2. Look carefully through the advertising section of some standard magazine, and select those advertisements which you think are best written. Give reasons for your opinions in each case. What ones are least compelling in general?
3. Make a list of ten things to which you have *spontaneously* attended during the day. Add to it a list of ten things to which you have paid *involuntary* attention during the day.
4. The next occasion on which you attend a public lecture, note the attitudes of attentiveness in yourself and, as far as possible, in your immediate neighbors. Discuss your results in class.
5. Which type of attention do you think most adults pay to their vocations and professions? Do you know of any exceptions?

THE LESSON APPLIED

1. In how far is fatigue a factor in reducing the degree of attentiveness of pupils? What common provisions are made by most school systems to reduce the possibilities of fatigue to the minimum?
2. Contrast the socialized with the non-socialized school in its probabilities of stimulating the maintenance of the attention of pupils at its maximum.
3. What should you say are the characteristics of a good lesson as judged by the profoundness of attention paid by the pupils?
4. What are some common distracting stimuli of the schoolroom? How may they be to a considerable degree reduced? Would it be possible or wise to rule them out absolutely?
5. What are some obstacles to ability to attend for which poor physical condition is responsible?

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LESSON 35

ATTENTION (*continued*)

What to look for in the observation period:

1. The typical form of attention paid by the children.
2. Whether there is greater evidence of the voluntary type being paid by children in the intermediate grades than in the lower or higher. Why?
3. The ease with which the attention of an individual or of the entire class may be diverted to the most irrelevant consideration.
4. Whether the teacher is needlessly "sugar-coating" education, or whether, on the other hand, she is very wisely and unobtrusively seeing to it that the lesson makes an appeal to the natural interests and instincts of the children.

Characteristics of attention in younger children. The things to which the infant in the first few weeks of its life pays attention are, as we have seen, those persons, things, and processes connected with the taking of food. The movements of the mother in preparing the bottle, for example, invariably rivet the weak attentive powers of the infant, and its eyes follow her about the room unsteadily as she busies herself in getting the bottle ready. Beginning also in this early life of the baby is the attentive attitude toward moving objects. Even though the mother be not concerned with preparing the food of the infant, but chances to be engaged in setting the room in order, or dusting the furniture, etc., the eyes of baby are certain to follow her movements. The same is true of the moving about of any other member of the family, or of a guest. A chair which continues to rock after some one has risen from it is likely to hold the attention of the infant until it ceases to move. A bird's cage swaying lightly in the breeze, or a curtain blowing at the open window, or the swinging pendulum of a clock are stimuli to which the attention response rarely fails to be in evidence. Even checkered sunbeams dancing

upon the floor or against the wall or ceiling attract the eyes. So with auditory stimuli; the banging of a door, or the tearing of paper, or a horn blown by some other child fix fleetingly the attention of the infant. Pain stimuli from within (organic) likewise are compelling to the rudimentary attentive powers of the baby.

In general, we may conclude that the characteristic form of attention manifested by infants is the involuntary type. Only those stimuli which are in themselves intense or unique or moving succeed in penetrating beyond the sense organs and arousing consciousness. For the rest the young infant remains quiet and sluggish, sleeping a great deal, attending in its waking state to nothing in particular, its mental life little more than a blank.

But the child's mental life does not remain a blank very long. Nor does it continue long to attend only to stimuli which are in themselves compelling. Within a very few weeks you will find the child beginning to manifest a dawning of interest in playthings and objects of furniture and parts of his own body as the manipulative instinct becomes stronger. He may sit or recline for several minutes at a time endeavoring to solve the riddle of the piano, or the electric-light fixture, or the tablecloth, or the telephone instrument, or the design in the wall-paper, or some other object near to him. Or, when a trifle older, he may pull his teddy bear to pieces, or destroy his rattle, or his nursery-rhyme book, or any other small article at hand. It is probable that the manipulative instinct is the first instinct beyond that of the taking of food which directs the child's attention to some concrete object and holds it more or less fleetingly for brief periods of time. Since now his attention is created from an instinct it must come about as the result of a dawning interest, for every instinct possesses a personal and immediate interest to the individual. Therefore you may conclude properly that in earlier babyhood there are evidences of the genesis of *non-voluntary*, or spontaneous, attention.

Characteristics of the attention of boys and girls. Boyhood and girlhood, as opposed to the period of earlier childhood about which we have just been speaking, represent the age *par excellence* of the operation of the principal instincts, notably play, which may be taken to include such other original responses as the migratory, hunting, gregarious, collecting, and rivalry instincts. And because this period of life is the age in which these fundamental instinctive promptings operate with the least degree of friction, because least modified and sublimated by experience, it follows that the spontaneous or non-voluntary type of attention is the predominating one throughout the period. Children in this age attend to their sports and their amusements and their games and their relaxational activities freely and spontaneously, and for the simple reason that they are interested in such stimuli as their play environment supplies to them without number and without limit. Let us summon up a few examples of play activities of childhood which challenge the free, spontaneous attention of their participants.

This morning I watched a five-year-old boy delving with his shovel in the dirt of the garden. It was not gold nor precious mineral that he was seeking. Rather he was engrossed in the tiny worms and the occasional bits of glass and the numerous small colored stones that his industrious shovel turned up. What prompted him? Curiosity — the thirst after knowledge. Was he intensely interested in his work, or was he merely plying his spade to pass the time away? By no means the latter. He was earnestly and thoughtfully examining every object which met his hand. Even his mother had to speak twice to him before he was fully aware that she had spoken. For somewhat more than an hour he thus labored in the dirt of the garden. His face grew flushed with the exertion, and he paused more than once to regard an incipient blister in his palm. No matter; he kept industriously at work. Spontaneous attention, called forth by his curiosity, prompted him. If you could

only succeed in holding his attention for an hour to his school work a little later, with all the concentration which he manifested this morning, you could probably promote him into the second grade in a week! And yet how unfortunate and unwise it would be to attempt to develop his mind any more rapidly than his frail body could keep pace. Nature after all knows best and tempers her instruction to his strength.

We have referred before to the intentness with which the child builds up his tower of blocks, adding each successive unit to the rest in fear and trembling, as it were. The play instinct compelled his spontaneous attention to the process until the dramatic moment arrived when they toppled over, and thus released his concentrated attentiveness. In play practice for skill, too, this same sort of un-voluntary attending is seen. It is far easier, for example, for a boy to concentrate his every energy upon the practice of a new curve in baseball than it is for him to practice for an equal length of time upon his scales at the piano! In the one case there is an immediate instinctive interest; in the other such interest, if present at all, is rather a remote one attaching itself to a possible future condition of skill at the piano which is still so far away that there is little spontaneity in the attention vouchsafed to it. How easy it is, too, to attend to such instinctive activities as collecting, or exploring, or tunneling, or tracking some prey to his lair! A broken toy, or a snarled fishing-line, or a leaking boat can be more readily attended to than an object which has no direct relationship to play. And how easy it is to attend to an interesting story which is being read! The youthful searcher after adventure and romance as recorded in some thrilling tale is utterly oblivious to the passing panorama of life around him. No doubt you can remember many favorite stories which you used to love in the golden days of childhood, and which you can still recall tolerably accurately, thus bearing witness to the profound attention which you devoted to them at the time.

It should perhaps be stated that, while the spontaneous type of attention is thus seen to be the characteristic type during childhood, the involuntary form is of course called forth on occasion. Whenever stimuli which are in themselves compelling reach the sense organs, they compel attention away even from that play or work which is inherently interesting, and to the unique or intense occurrence or situation. For example, no matter how profound may be a boy's interest in a game or a story, he is not slow to respond when the fire bells sound, or when an airship passes over, or when the automobile skids against the sidewalk. To such situations he turns his attention involuntarily, just as do his older and wiser fellows. For him, as for all of us, however, the involuntary attitude of attending becomes only an incident; his predominating interests lie in situations which are inherently interesting to him.

Voluntary attention in children. Play and happiness are normal conditions of childhood. Spontaneous attention should therefore be the rule. But beginnings have to be made, even in the magic time of childhood, to adjust one's self to the circumstances of adulthood. Hence the elements of voluntary attending need to be founded in children's lives. In some cases, however, too early exercise of the power of forced attention results in distinct injury to the health of the child. Such, for example, would be true of children who are obliged to go to work while still little more than babies. By being compelled to pay attention to work situations in which little or none of the play element enters, very young children thus not only stunt and dwarf their physical growth, but retard and do violence to their mental growth as well. It may chance that you have seen such children, victims of what we term child labor, and victims of the greed of men. Still, such perverting and aborting of childhood and the normal expressive side of childhood are relatively uncommon. For the great mass of children everywhere childhood is enjoyed for childhood's sake, and the toil of the future throws little shadow upon it.

But childhood is the prelude to adulthood; it is the pre-

paratory period for living. Hence, since one of the requisites of adulthood is ability to pay sustained, voluntary attention, the foundation stones of this same ability have to be laid in childhood. Among the many situations in which and from which this ability is slowly evolved belong such activities as learning to dress one's self, and to bathe and care for the hygiene of the body; doing simple tasks about the house, such as washing dishes, and filling the coal-hod and the wood-box; studying and practicing music lessons; learning simple selections to speak or recite; and other activities commonly required of children. Thus, by the time the child has come up to school age he has formed certain elementary attitudes and habits of voluntary attention upon which the teacher may build in the more formal work of the school. And even in the schoolroom, as you have observed, the interest of a child is attracted to a given lesson often by turning it into play, and thus summoning up the more easily given spontaneous attentiveness. Naturally there are certain limits to this "sugar-coating" of education, but the fact remains that one of the best ways to train the voluntary attentiveness of a child is to furnish plenty of attractive material for his spontaneous attending.

Not long since, I watched a group of kindergarten children weeding their somewhat neglected garden. Each child had a tiny plot in which were a few scattered flowers, with now and again a cornstalk. The children were inclined to play with a toad which lived in the damp stone wall beside the garden, and their weeding bade fair to be entirely neglected. But when the wise teacher pointed approvingly to the tiny plot of one of the tiniest girls — which had been surprisingly well weeded by an industrious child who had denied herself the happiness of playing with the toad — immediately there was a general movement on the part of all the other children in the direction of the garden, and before many minutes had passed not a weed was to be seen anywhere. The flowers and the cornstalks were undisputed possessors of the plots. You can understand thus how, by wisely playing upon the instinct of rivalry and perhaps

approbation, the teacher succeeded in persuading her spontaneous-minded children to attend to a piece of difficult work until they had finished it.

In brief, the heart of the child is in his play which he has either just left or else is shortly to resume. You may send him to the store on an errand, and ply him with warnings not to forget what he is to get, but you need not be surprised if he returns with only a part of the order, or with totally different things from what were required. And yet, if there were any candy mentioned as a possibility, he hardly forgot that! All attempts at voluntary attention are likely to be unpleasant until through interest or the arousal of ultimate desirable ends a non-voluntary attentiveness may come in to urge the child forward into ever greater and greater conquests of mind.

TOPICS FOR SPECIAL STUDY AND REPORT

1. Observe an infant in the cradle for ten minutes, paying special heed to the things to which he attends during that time.
2. Observe a group of children at play on Saturday, and note the sort of attention which they appear to be giving to their games.
3. Report any illustrations which may come under your notice of voluntary attention paid by a child, or a group of children.

THE LESSON APPLIED

1. What would be some disadvantages of the voluntary type of attention as the one chiefly appealed to by the work of the school?
2. Some teachers of the old school still maintain that a prominent end of education should be the developing in children of ability to pay the strictly voluntary brand of attention regardless of whether any interest inheres in the educative process or not. What is your reaction to this contention? Is there, then, any positive relationship between interest and effort?
3. In how far do you think the successful schoolroom atmosphere inspires children to propose the investigation of interesting topics and questions that arise out of the lessons? When the children feel that they are thus originating their own problems what is the type of attention that they are apt to give in finding the solutions?
4. What are some good ways of securing attention? Some poor ways?

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LESSON 36

MENTAL IMAGERY

What to look for in the observation period:

1. Whether the children appear to be getting clear images from their study.
2. In how far the teacher takes special pains to clarify and organize the information which the class is receiving from its study, discussion, and field work, to the end that clear and definite images may be guaranteed.
3. Evidences in support of the statement: "Childhood is the springtime of the imagination."
4. Any evidence that the study of the lives of great men and women of the past is firing the imagination of the children.

Imagery defined. In our discussion of perception we discovered that all our sources of information concerning the outside world are derived through the five senses, and that in a similar way all information which we have concerning internal or muscular reactions within ourselves came about through the kinæsthetic and organic senses. Once such sense impressions have crossed the threshold of consciousness, as we saw, they acquire meaning and are termed perceptions. We referred, for example, to the perceptions of the bottle and the milk and the processes concerned with the taking of food by the infant as arising from seeing those objects and processes. We referred also to certain auditory and olfactory and tactile and gustatory and organic and kinæsthetic perceptions which arose from actually hearing, smelling, touching, tasting, etc. In this lesson we are to be concerned with the *results* of perceptions. Images may be defined as *the traces left in the nervous system by perceptions and sensations, and which may be revived in the same or in different order as when originally experienced.* Obviously, the nervous system must be so constructed as to be able to retain all the many impressions

which are borne in to it from the end organs and interior of the body. These traces are termed in psychology images, and make up what we term our imagery. Having seen, for instance, the bottle and the milk, and having experienced the satisfaction from drinking the latter, the infant *retains* certain more or less sharp *images* of the whole process of its food preparation and taking. Let us illustrate this power of the nervous system to *image* previous experiences by citing some other common examples.

Illustrations of our imagery. If you were asked to recall to mind the appearance of your own home, you would find little difficulty probably in reinstating the traces left in your mind of your past experiences with the home. No doubt you could draw a plan of the house, indicating every window and doorway and correctly locating every room and hallway within. So with the people who live in it; you can summon up pictures of every one. In such case, your picture is known as a *visual image*. You have visual images of all of your friends and neighbors, your street, the landmarks of the town in which you live, the sunset, the moonlight night, the cloudy sky, and the shimmering lake. In short, there is nothing which you have ever seen and noted which does not continue to remain at your hand, ready to be called back at will. So with things which you have heard. You can still "hear" in your mind's ear the melody played at the piano, the shrieking whistle, the puffing of the locomotive, the swish of the waterfall, and the roar of the ocean. You can also "hear" your friend's voice, the barking of the dog next door, and the cheery boiling of the kettle at evening. Such traces of past experience left in the nervous system are known as *auditory images*.

In the case of the skin sense perceptions it is no different. On the side of sensations of cold, you are able to recall how the ice "feels," and the still, frosty, winter evening; on the side of sensations of warmth or hotness, you can easily call up memories of the hot radiator throwing out its heat waves full against your face, or the midsummer sun pour-

ing down upon the parched street at noonday. Pain memories also survive in your ability to reinstate at will images of a cut finger (not the *sight* of it in this instance, but rather the sharp, quivering *pain* of it) or images of a splinter driven deep into the finger. On the side of the simple sensation of touch, you are able to "feel" again in memory the smooth velvet and the soft fur, and the greasy dish. Such traces left by the skin experiences may be called generally *touch* images, or images from the *dermal senses*.

So with the sense perceptions of smell. You can easily reinstate images in your mind of the odors from a bunch of freshly plucked roses, or the delicious fragrance of an apple orchard in springtime. You can also easily summon up images of the smell of escaping gas, or of decaying vegetable or animal matter, or of the freshness of the air after a thunder-shower. Such images resulting from perceptions of smell may be included under the head of *olfactory images*. The case is not different with the traces of taste perceptions. Without any difficulty most of us can reproduce the taste of the tart apple, or of the pear, or of vinegar, or salt. Such images which the nervous system continues to retain after original sense experiences with the articles of food we may term *gustatory images*.

On the side of the organic images, the ability to retain them faithfully is not so marked as in the case of the five surface senses. Still, we can to a degree reinstate the aching tooth and the headache, and the general feeling of ennui in our minds; such images are included under what we may term *organic images*. The same may be said of the images resulting from muscular contractions. We can call up fairly constant images of a fatigued arm or hand, with which we have done several hours of writing. We can also reproduce internally images of the sensations which came to us in such activities as running, skating, rowing, etc. To this class of images is given the general name, *kinæsthetic imagery*.

A psychological "image" *versus* the image in popular

speech. From the foregoing classification of all possible forms of imagery you can readily understand the important difference which the term "image" as used in psychology has as compared with its meaning in popular terminology. We say loosely, "John is the image of his father"; or, "my dress is the image of yours." Image in such usage signifies a similarity which is objective. The image of psychology, however, stands for a similarity which is subjective, existing only in the mind of the person possessing it as a more or less exact counterpart of the objective reality which initiated it. Thus, your image of your home exists only in your own mind; it is subjective, standing for a reality which is objective. So with all your other store of mental images.

There is another significant difference between the "image" of psychology and the "image" of everyday speech. According to everyday usage, an image is related to vision, to the sense of sight, whereas in psychological terminology, an image may be related to any one of the seven possible sensations: seeing, hearing, tasting, smelling, touching, feeling organically, and muscular strain. Thus, according to the terminology of psychology it is just as correct to speak of an *auditory*, or a *gustatory*, or an *olfactory*, or a *tactual*, or an *organic*, or a *kinæsthetic* image as to speak of a *visual* image. All are traces left in memory of original sense perceptions; as to which of the possible end organs of sensation are concerned matters nothing. You should, then, appreciate, at this point in our discussion, that so long as an experience is still present to the senses it is a sensation plus a perception; after it has disappeared from the range of the senses it exists in the mind only as an image.

The value of images. Obviously one's images are far less clear and constant than his perceptions and sensations; memory of an experience cannot compare in vividness and constancy with the vividness and constancy of the actual experience while it was present to the senses. For example, you no doubt find that the image of your home which you

can call up in your "mind's eye" is by no means so satisfying to you from the point of view of tangibleness and dependability as would be the actual looking at it with your eyes. Nevertheless, the ability to retain these traces of sense perceptions is tremendously important to every one of us. But for them we should never be able to recognize past experience and events in which we had participated; we could recall nothing; we could imagine nothing; we could appreciate comparatively no work of art, because it would appeal to nothing in our past experiences in art; we could learn nothing, for there would be nothing old upon which to build; we could not reason, for we should have no ability to weigh images and so decide between two courses of action; we could not think, for we should be possessed of no powers of abstraction; in brief, we should be poor creatures of sense, tossed uncertainly about on the billows of life, without chart or guide. If you will for the moment call to mind the behavior of any one whose mental condition borders upon insanity or marked derangement you will perhaps better realize how hopeless is the state of one whose images have been confused and distorted by nervous disease, and can from that judge of the condition in which a person would be mentally who had no mental images at all.

A child's imagery. We have seen that the earliest sensations and perceptions of infancy are concerned with the food-taking situation. It follows from this fact that the first memories, or traces left by these early sense perceptions, are those which have to do with the same food-taking process. The infant very soon comes to retain an image of the bottle in his mind, so that he recognizes the objective one when his mother produces it. The very fact that he recognizes it indicates that he retains an image of how it looks to which he is able to compare the objective one when it appears. In like manner, when the child's toy is missing he is aware of that fact: he possesses an image of it. So with his mother. So long as she is in sight, all is well; but let her step out of the room and at once there are symptoms

of distress. Obviously, the child retains an image of her and is satisfied only when she returns and he finds the image matched by the reality. Nor will any other mamma answer the description: he cannot be deceived by the most clever dissimulator. Do you recall the illustration cited in a preceding lesson, of Miss Shinn's niece being dumbfounded at beholding the coil of gray hair and the back of a head turn suddenly and miraculously into grandma when grandma turned her head? The explanation of this surprise lay in the fact that the coil of hair as seen from the rear did not match the partially formed image of grandma which the child retained in her mind from having seen grandma only from the front. And you recall that the child's attention was compelled time and again to this new aspect of grandma as seen from behind. What the child was doing was to endeavor to link up the earlier perception with the later into a more definite and accurate image of grandma. As children pass out of infancy their rapidly increasing powers of observation naturally prepare the way for a rapid increase in the number and range of images which they possess. We have said that the child lives in a world of sensation; we may now infer that the child also lives in a world of images which result from the sense perceptions with which he is surrounded.

The springtime of the imagination. Thus does one writer refer to childhood—the springtime of the imagination. Now the imagination is nothing more nor less than the playing with all these images which flood in upon the thirsty, eager mind. If you are at all familiar with the ways and wishes of children you know well that they live indeed in a world of unreality, based always, however, upon one of distinct reality in which they live, move, and have their being. But they seem to extract often from this world of actuality about them such wonderful experiences, such happy imaginings, such quaint ideas and beliefs, such impossible values! If you have ever told a story to a child you must have been struck with the interest which he felt

in your narration, judging from his baited breath and his dreamy, far-away eyes. He was living not in the world in which you were living, but rather in the delightful world of imagination. In the everyday life of children so many new experiences and discoveries plunge in upon their minds that they are fairly surfeited with them. Every story listened to increases these deliciously satisfying images; every picture from *Mother Goose*, every nursery rhyme likewise multiplies them. Every journey into the woods adds to them. For every new situation which arises the child has an explanation of his own to offer, and which quite satisfies him. Out of his heterogeneous store of imagery he is able to throw around every flower and every bush and every tree and every stone a veil of romance and myth which we older folk can but marvel at in wonderment. By the magic of his imagery he imputes life and sense to the inanimate objects which surround him; he peoples the world with giants and pygmies, according to the mood of the moment; he communes with the flowers and the birds and the trees and the stones as with real playmates of the flesh; in his happy play a line of chairs can be converted at will into a train of cars, or a friendly dog into a savage bear, or a dry-goods box into a house on a city street! From his lowly blocks he builds up columns and towers and churches and temples that rear aloft to dizzying heights into the sky.

Children's ideals and ambitions. Probably at some time you desired more than everything else in the world to be like some one whom you chanced to know and admire. It may have been your own mother, or father, or aunt, or uncle. Or it may have been an older playmate, or a teacher. But like some one you certainly dreamed of being. Hardly a child passes up through the period of later childhood without experiencing this longing to be like some one who is particularly admired. Every one must have an ideal; it is a sort of hero-worship which enthralls most of us at some time or other during the magic age of childhood. Many of us never outgrow this longing of our childish hearts, and con-

tinue through life especially loving and looking up to some character of history or literature as our ideal. Usually, however, the age of hero-worship passes away and leaves us poorer perhaps than before.

So with the ambitions of childhood. What boy does not long to be a locomotive engineer when he grows up? It is hard for many a boy at the tender age of nine or ten to imagine a future in which he does not guide some mighty leviathan of the rails through gorges and under mountains and across plains with a touch of his hand! And where is the girl who does not long to be a teacher, or a milliner, or a dressmaker, or perhaps an actress? Fortunately, perhaps, our ambitions of childhood rarely come to fruition in maturity. Were it not so perhaps we should have none in our land in the next generation save trainmen and policemen and milliners and teachers and perhaps actresses! The influence of the passing years and the new interests which are bound to come with newer and ever newer experience serve to wean us from the magic spell of childhood's ambitions, and open up before us a new heaven and a new earth, the future.

TOPICS FOR SPECIAL STUDY AND REPORT

1. Bring to class a list of five different images which you have.
2. Tell some story to a child and report upon his reactions to it. If possible note over a period of several days whether he still retains the story in memory and is playing with the imagery which it suggested to him.
3. Had you an ideal in childhood? Do you still retain it?
4. Had you some definite ambition in childhood? What is your present attitude toward it?
5. Look up the matter of children's lies. Why do they tell untruths? Can you furnish instances that have come under your own observation?

THE LESSON APPLIED

1. If the images which children are to harbor as a result of their study of the school subjects are to be clear and accurate, what must be true continually of their sense training and their perceptions? Illustrate.

2. The predominating type of imagery in most of us is the visual. This does not mean that in the training of children the strengthening of other types is to be neglected. Are there evidences in the children under observation that the visual is the predominating type among them? What efforts are being put forth by the teacher to establish dependable auditory and motor images?

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LESSON 37

MEMORY AND IMAGINATION

What to look for in the observation period:

1. The eagerness with which children supply, to the topic under discussion, either slightly related or wholly unrelated experiences which they have themselves had.
2. Evidences of the desultory, or "scrappy" nature of children's memory, especially of those in the lower grades.
3. Whether a high degree of interest is attending the children's learning.
4. In how far the teacher is endeavoring to see to it that the children are properly organizing and linking up their memory material; i.e., are constructing from the desultory memory of childhood the foundations of a dependable logical memory of maturity.

Memory and imagination. In the previous lesson we found that every sense perception experienced by an individual leaves traces, or images, in the nervous system of that individual. We found that there were visual, and auditory, and tactual, and olfactory, and gustatory, and organic, and kinæsthetic images, thus making up the sum total of one's imagery. Imagination we define as merely the ability to reinstate these images, regardless of whether they are revived in the same order or form in which they were originally presented or not. For example, we discovered that a child's imagination leads him to work over and intertwine various of his images into totally new combinations. Thus, a story told to him he proceeds at once to take remarkable liberties with in his imaginings. Jack the Giant-Killer may be in the child's imagination anything but the character which you ascribed to him when you told the story; so much so, indeed, that perhaps you will be quite at a loss to recognize in the Jack of the child's play and questioning and dramatizing the Jack of the story. In other words, the higher nervous system is of such an integrating

and harmonizing nature that original experiences are quite transformed to suit the mood of the moment, or of the period of life in which one is. Then, too, several experiences which were originally distinct and unrelated are often fused together in consciousness in such a way that apparently wholly new combinations are achieved.

It is this integrating or fusing character of the mind with respect to the experiences which it registers in terms of images that often leads the uninformed to maintain that there are occasional fruits of the imagination which have no basis in past experience. If you will recall to mind some of the weird, impossible tales of Poe, for example, you will perhaps tend to lean toward that conclusion yourself. But this is a false opinion. Even the seeming impossible occurrences in Poe are based in certain past sense perceptions. The originality of the author lies only in his ability to combine original perceptions into new settings and new images. It is not unlike a patch-work quilt; dozens of pieces from this old garment and from that are brought together and combined into a new quilt. In a similar way, the mind fuses together experiences of this and of that into apparently new combinations. The old adage, "there can be nothing new under the sun," is herein justified. Even a great inventor, or a great writer, or a great artist is limited in his execution by his experience, or his store of images. Edison invented the electric light — apparently something wholly new — by linking together knowledge gained in great numbers of experiments until he was able to combine his several knowledges in such a way as to control a hitherto uncontrollable force. So with the writer: by casting new designs about age-old characters and plots and human interests he is able to produce a *David Copperfield* or a *Cotter's Saturday Night*.

One other thing should be said about imagination. It may take the form of apparently new inventions, as noted above, or it may merely prompt us to day-dream and build air-castles to no purpose. In the latter case the imagina-

tion may be said to be passive; in the former, active. In either case it is *productive*: i.e., it takes groups of images from innumerable experiences and combines them into a new *product*.

Memory, however, may be defined as *reproductive imagination*. It is the *ability of the mind to reinstate past experiences as they occurred, i.e., in the same order and form, and to recognize them as definite past experiences*. For example, your image of your own home, which you are able to call up at will, you recognize definitely as a true experience. So with your other images which are associated more or less changelessly and constantly with definite experiences of the past. Herein lies the great difference between imagination and memory: — the former may or may not be composed of exact images of definite past experience; the latter must be, and it must be recognized as a faithful reproduction of such experience. And because memory consists of the ability to reinstate and recognize past images or perceptions, it is properly classed as reproductive imagination. You can appreciate for yourself the value of *recognition* as an element in the memory process by considering the mental confusion and helplessness which would result were a child unable to recognize that $7 \times 9 = 63$, etc. If he were not *sure* of himself his memory would be of little use to him.

We are now in a position with respect to memory and imagination to make the following classification of imagery:

Imagination:

(a) Reproductive imagination:

(1) Memory.

(b) Productive imagination:

(1) Active:

Inventions, artistic creations, etc.

(2) Passive:

Day-dreams, reveries, etc.

It is evident from this classification, and from the preceding discussions, that imagination is a term which in-

cludes all memorial processes, and that, psychologically speaking, memory is a sub-division of imagination. The term "imagination" has, as its root meaning, "image," and for this reason comprises properly all types of mental response based upon images. Both the actual memory process and the more generic imaginative activities are, as we have pointed out, based upon images. In what sense is the term "imagination" likely to be used in popular phraseology? Witness the far broader psychological significance of the term.

Earliest memories of childhood. If you will think back into your own childhood in an endeavor to discover what memories stand out as being the most lasting in your early experience, it is not unlikely that you will find among the brightest and most vivid impressions still retained memories of some birthday celebration, or some Christmas tide, or some trip away from home, or perhaps the first day passed in school. It may be, on the other hand, that instead of these more pleasant memories you find other and less pleasant experiences, such for example, as the time when you lay ill in bed for a month with one of the numerous so-called "children's diseases," or the occasion of some death in your family, or some severe punishment which you were compelled to suffer, or perhaps when you passed through some trying experience in which you were very much afraid. In other words, it appears that those memories which remain with us longest are those which are tinged with a high degree of emotion, such as joy or sorrow. Such experiences one never forgets, and the pleasant ones return with overwhelming force on occasion to take us back to the merry, care-free days of childhood.

This very persistence of memories associated with strong emotion furnishes us a strong clue to the memorial capacities of children. As a rule they are intensely interested in events from which they derive pleasure and happiness. Sometimes they are compelled to pay attention to things and happenings from which they derive rather pain or un-

happiness than the reverse. In either event it is the vivid experience which makes the lasting impression; it is the vivid impression which remains longest in memory. Those experiences which, on the other hand, make little impress upon the senses and summon up few associations in the mind are the ones which fade first. Activities accompanied by a high degree of interest or attention make for lasting and permanent memories, because they force upon the recording nervous system clearer and sharper images.

Who of us, for example, cannot recall the favorite nook or cranny wherein we were wont to seek solitude or quiet in childhood? And who of us does not remember yet the *Mother Goose* and the nursery rhymes of childhood? Who does not recall the favorite games, the well-loved haunts, the happiest hours lived, the caves and hillsides and forests explored? Golden memories of mature years are usually the survival of vivid experiences in childhood and youth.

Desultory memory of childhood. We adults possess as a rule a somewhat interrelated memory, wherein each experience is more or less closely related to each other experience of like nature. For example, all our several experiences with the works of Dickens or with the process of manufacturing rubber goods are a sort of unit in the mind, closely associated and logically connected. In children, however, the case is quite different. The typical memory of childhood is what we may term a "desultory" memory; i.e., it comprises a great number of somewhat isolated facts which it has gleaned from an exceedingly many-sided range of activity. Each one of these unrelated memories appears to be held indefinitely in the mind of a child, almost without connection with any other relevant experiences. You may be surprised some day, for instance, to have a child to whom you have told a story some time before ply you with questions as to the character or characters, about whom you yourself have in the meantime no doubt forgotten. It seems that a child never forgets any experience which he has had. You or I forget very quickly those ex-

periences and incidents in our lives and in our reading which do not appear to possess any particular significance for us; children rarely forget them, perhaps because their body of knowledge is much more rudimentary, and every new experience is clung to until later experiences of a similar nature can be referred for interpretation to earlier ones. Were it otherwise, each new experience would remain new, and would be speedily forgotten because there would be no mental nucleus to which to attach it.

Thus it comes about that the child of tender years possesses a considerable range of information and experience in a more or less scrappy or "desultory" arrangement. He knows, for example, something about giants and something about dwarfs; something about air, and water, and steam, and vapor, and smoke. He knows something about honor, and truth, and politeness, and their opposites; he knows something about clocks, and clouds, and stars, and cows, and goblins, and angels, and trains, and grasshoppers, and baseball, and a few hundred other activities or conditions or objects, all thrown more or less haphazard into memory in much the same way that they are here enumerated — without order and without relationship.

But these very unrelated images and ideas which throng so vividly through the child mind will sooner or later become better organized through association into what we may call the "logical" memory of adults. Rapidly the child gains other and yet other experience in all these departments or phases of human life and activity until at last he possesses a tolerably unified and correlated series of memories. And yet adults often possess little better than child minds, so far at least as organization and correlation of experiences are concerned. Many of us have desultory rather than logical memories.

TOPICS FOR SPECIAL STUDY AND REPORT

1. Tell a story to a child in which there is considerable imaginativeness, and note the interest which he manifests in it. If possible, report upon his reaction to the story; i.e., does he appear to be turning over in his mind the images which he has gained from the story, and does he question you further concerning it?
2. Give illustrations of active and passive imagination.
3. Determine if possible the kind of stories which children of five or six years of age appear to like best. Can you tell why?
4. Recall your earliest memories of childhood. Are they explainable on the grounds mentioned in the lesson?
5. Cite any illustrations which you may be able of the desultory nature of children's memories.

THE LESSON APPLIED

1. In what ways are habit and memory related? Illustrate concretely.
2. Contrast the values of strictly "memory" work with the kind of work requiring independent thinking on the part of the pupils.
3. "It is the vivid experience which makes the lasting impression." What responsibility does this statement place upon the teacher and the teacher's methods?
4. To what extent should the work of the school train the productive or creative imagination, as distinct from the strictly reproductive? Illustrate.

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3. James, Wm. *Psychology*, chap. 13.
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5. — *Imagination and its Place in Education*, chaps. 5 and 15.
6. McMurtry, F. M. *How to Study, etc.*, chap. 7.

LESSON 38

THINKING

What to look for in the observation period:

1. Whether the children are permitted and expected to think for themselves. In what ways does the teacher strive to aid and encourage them in independent thinking?
2. Evidences of the naiveté of children's reasoning.
3. Individual differences in the ability to think and reason.
4. Whether children in the lowest grades do any real thinking, i.e., is thinking ability something that appears suddenly in a higher grade, or does it represent a growth from the earliest beginnings in the pre-school life of the child?

The concept. In our lesson on perception we saw that whenever sensations acquire meaning in our minds as the result of past experience they cease to be sensations primarily and become perceptions. We used as one of the illustrations of a perception the child's increasing experience with the cat. It sees the cat walking about, it perhaps hears its mewing, it touches and strokes its back, and may even be scratched by its claws — all of which sense impressions are transferred to the perceptive powers of the child and go to make up his knowledge about that particular cat. Henceforth the child has a definite perception of the cat and recognizes it whenever it chances to pass. He likewise possesses a rather distinct visual image of the cat which enables him to call up a mental picture of it when it is not present.

But so far the child has not learned anything about cats in general. To him there is only one cat in the world — Tabby. Let a dog chance to pass within range of the child's vision; immediately he thinks *Tabby*, or *his cat*. On closer inspection, however, he notes certain differences between the dog and his image of cat. In his mind at present, if he could formulate his notion of a cat into words, a cat is something that walks, may be either large or small, of one color

or of another, and possessed of two possible languages. As experience succeeds experience, however, and as he sees other and yet other cats and other and yet other dogs, his notions about both begin to be somewhat clarified, until finally he arrives at a tolerably accurate notion of what a cat is as contrasted with what a dog is. He discovers, for instance, that not all cats are alike; there is a difference between *the* cat and a *cat*. A *cat*, he finds out, is a four-legged animal, with a mew, with sharp claws, much smaller than a dog, with finer fur, and of somewhat different habits. In a similar way, a dog is ultimately discovered to be an animal with four legs, with a bark, possessing coarser fur, and is considerably larger than the cat. Somewhat later he may learn that there are certain species of dogs, however, which are no larger than cats, and whose fur is quite as fine. The notion of *dog* is therefore narrowed down to a four-legged animal of certain well-known habits, and possessed of a bark. When this process has been completed, we term the resulting notion in the child's mind a *concept*. A concept is then, apparently, built up of many individual experiences, or percepts, the images of which are finally fused in the mind into a *general* notion. We may define a concept as a *general name for a class of related objects*. It is only after many experiences with individuals that their common qualities, or resemblances, may be extracted and combined into general ideas, or concepts. It does not matter whether the individual objects be cats, or dogs, or houses, or carts, or trees, or flowers, or children. It does not even matter whether they be abstractions such as a kindly act, or a traitorous deed, or a false statement, or patriotism, or truth, or honor, or love, etc.: one's *conception* of all such objects or abstractions as these depends upon experience, or perception, of a great number of individual instances in which either the objects have been observed or the abstractions exemplified. One's conception of truth, for example, is based and built upon the number of times in which one has seen a truthful act done, or has read or heard about it.

One other illustration of how the child builds up his concepts will be sufficient to show the importance of experience with individual objects in the life and mental development of the child. Take the growth of the concept of table. In the nursery perhaps there is a small round four-legged table, stained dark brown. So far as the child's observation goes, a table is this particular table; the world holds for him at this point no others. But when he is carried into the next room, behold! a quite different table, large, stained a yellowish shade, and perhaps possessing five or more legs. As the child grows stronger and penetrates into other rooms he beholds other and yet other tables, and as he enters other homes he discovers that perhaps no two tables are alike. And yet he is not confused greatly. Even though there are round tables and square tables and oval tables and three-legged and four-legged and five- and six- and eight-legged tables, and yellow and green and black and brown and natural finish tables, etc., *a table* is soon discovered to be a piece of furniture possessing legs and designed to place things upon. Here is his *concept*, and to it he may refer all new tables met in the future, without bothering to register a definite memory image of every one encountered. We said in the last lesson that one of the characteristics of a child's memory is its desultory nature: an image here and an image there and an idea here and an idea there, apparently without any connectedness or order. But it is these individual and isolated images which are the nuclei about which all subsequent perceptions of related objects or principles cluster. We said also that the characteristic of the vigorous adult memory is its logical and ordered arrangements of memory images. You can now appreciate that after all this well-ordered, adult memory is merely the child's desultory "here-and-there" memory developed and supplemented by hundreds of new experiences. In other words, adults have more accurate and filled out concepts, while children have only the skeletons upon which later concepts are built.

The child is in the *perceptive* stage; the adult is in the *conceptive* age.

But now what has all this to do with thinking? A great deal, because thinking is, after all, impossible and useless unless one has clear and definite concepts and ideas. How, for example, can you think and think intelligently about whether a man is just to his neighbor unless you have definite concepts of what constitutes justice? Or how can you determine what punishment to mete out upon a child unless you have some fitting notion of what constitutes an offense? As teachers, as citizens, as neighbors, as advisers and guardians of childhood, we all have abundant need of clear conceptions of some of the fundamental relationships between individuals and groups and nations and principalities. I shall cite but a single illustration to demonstrate the need of accurate concepts in order to think clearly. That illustration will be the conception of what constitutes good citizenship.

As these lines are being written we are living in the midst of alarming uncertainties. Strikes are multiplying throughout the country. Boston, the city of culture, the Athens of America, is convulsed in the throes of one of them. Thievery and robbery and larceny and outrage are being committed in her erstwhile law-abiding streets. Over the whole country there looms the threatened strike of all manner of laborers in a general walk-out to coerce the capitalists and financiers to either hand over all management of industry to the laborer, or else to vouchsafe to him a considerable part of it. And this in the midst of the twentieth century, when the greatest war that has ever rent the earth and the men of earth is hardly yet ended. Never before in the history of human kind has there been such great need of ability to *think* as there is to-day. But who is able to? Who has trained in himself such ideals of good citizenship, for example, as to be eager and willing to admit that there is justice in the contentions of both parties to the nationwide disputes? Who knows what justice *is*? Who is able

to *think*? Obviously every disputant knows his side of the controversies; but who is broad-minded enough to consider the other side? Who knows what broad-mindedness is?

What the world needs to-day is finer conceptions of citizenship, broader notions of man's own responsibilities and duties, nicer conceptions of justice, fairness, even magnanimity. It was a relatively easy matter to arrive at definite conceptions of the ideals of a treacherous enemy country: it is a much harder thing to form conceptions of abstract qualities and principles, upon our national ideals of which must be dependent the outcome of the present labor difficulties. And so with the controversy over the Society of Nations. How few of us there are, after all, who are sufficiently intelligent in the matter of fair play and justice and peace between nations to have even an opinion! And yet everybody *has* one. Where is that broad-mindedness, based upon clear thinking and nice conceptions, which can dissipate the befogged conditions of so many of our minds and aid us in thinking this and all other perplexing questions through to an inevitable conclusion?

Thinking a process of analysis. Thinking implies a problem. No one would ever think who encountered no problems in his life. But once the problem presents itself, how shall it be attacked? Obviously by summoning to one's aid all possibly relevant factors bearing upon it, by selecting those which are possible explanations, and then by applying the proper ones to the problem at hand. Here is a quotation from Professor Dewey's book *How We Think* which illustrates excellently the process of thinking out a problem:

Projecting nearly horizontally from the upper deck of the ferry-boat on which I daily cross the river is a long, white pole, bearing a gilded ball at its tip. It suggested a flagpole when I first saw it; its color, shape and gilded ball agreed with this idea, and these reasons seemed to justify me in this belief. But soon difficulties presented themselves. The pole was nearly horizontal, an un-

usual position for a flagpole; in the next place, there was no pulley, ring, or cord by which to attach a flag; finally, there were elsewhere two vertical staffs from which flags were occasionally flown. It seemed probable that the pole was not there for flag-flying.

I then tried to imagine all possible purposes for such a pole, and consider for which of these it was best suited: (a) possibly it was an ornament. But as all the ferry boats, and even the tug boats, carried like poles, this hypothesis was rejected. (b) Possibly it was the terminal of a wireless telegraph. But the same considerations made this improbable. Besides, the more natural place for such a terminal would be the highest part of the boat on top of the pilot house. (c) Its purpose might be to point out the direction in which the boat is moving.

In support of this conclusion, I discovered that the pole was lower than the pilot house, so that the steersman could easily see it. Moreover, the tip was enough higher than the base so that, from the pilot's position, it must appear to project far out in front of the boat. Moreover, the pilot being near the front of the boat, he would need some such guide as to its direction. Tugboats would also need poles for such a purpose. This hypothesis was so much more probable than the others that I accepted it. I formed the conclusion that the pole was set up for the purpose of showing the pilot the direction in which the boat pointed, to enable him to steer correctly.

The above is an excellent illustration of the thinking out of a problem. The narrator of the experience, having become interested to solve the mystery, proceeded to summon up all possible explanations which were in any way relevant; then, one by one eliminated all but the one which fitted the case. None of the possible explanations tallied with his conceptions of ornaments-for-a-boat, or wireless-telegraph-terminals, or any other purpose save the final hypothesis.

Inductive and deductive thinking. Inductive thinking consists in amassing large numbers of individual perceptions until the point is reached where it appears safe to *draw a conclusion*. Thus, if a child discovers that every sentence in the newspapers and the magazines and the books begins with a capital letter, he is justified in concluding that

every sentence should begin with a capital letter. He has, in other words, proceeded from the particular to the general. In this way all universal truths are arrived at. A great deal of our adult thinking is done inductively. Thus, we have reached the conclusion that whenever it clouds up rain is likely to follow. This sequence has been so often observed that we feel justified in making the induction. Often, however, we fail to collect enough data to warrant our "inductive leap." Thus, it is sometimes said that a red-headed person is always quick tempered. This is obviously a case wherein we have drawn the induction prematurely; having noted the sequence to be true in one case, we assume that it is always true, which is of course absurd. How do most of our superstitions grow up?

The deductive method, on the other hand, sets out with the assertion of a general truth and proceeds to demonstrate particular derivatives to be true. For example, the lesson that all sentences should be begun with a capital letter would be developed deductively by stating the general fact — all sentences begin with a capital letter. The child would then proceed to explain why any given sentence is so begun, thus applying to individual situations the general truth contained in the major premise. The classic illustration of deductive reasoning is:

Major premise: All men are mortal.

Minor premise: Socrates is a man.

Conclusion: Therefore, Socrates is mortal.

The term *sylogism* is applied to the above formula employed in deductive reasoning.

As a matter of fact there is a very close relationship between induction and deduction in our everyday inferences. Induction cannot take place without deduction, nor can deduction take place without induction. For example, if the child has made the inductive discovery that iron is heavy, through having lifted and tested the weight of several pieces of it, he has but established a general principle

which he did not know before; namely, all iron is heavy. In future experiences with iron he will refer the situation to his general principle, thus not only interpreting it in light of the principle but inductively strengthening the deductive principle involved. In our actual thinking, then, there is no particular difference between the two forms of reasoning; each is needed to supplement and strengthen the other.

Children's reasoning. We have stated and reiterated the fact that the child lives in a world of perception, a world of new experiences and new images. It is not surprising therefore that the reasoning power or the thinking power of children should be somewhat confused and illogical. The child's ideas of time and space are vague, his concepts of most objects and all abstractions are wholly inadequate for several years. He moves in a world of giants and ogres and demi-gods, of myth and saga and romance, in which clear and positive knowledge develops rather tardily, and we encourage this tardiness by delighting ourselves to keep the child in this delicious age as long as possible: we love his impracticality and defer purposely the time when he shall be a practical thinker and logician. On the other hand, you have certainly observed the working of children's thought on occasions which made you marvel at his astuteness, or wit, or quickness and keenness of comprehension. Occasionally a child manifests a mental perspicacity quite beyond his years in his clarity of interpretation or inference. In the following paragraph are several illustrations of children's thinking. They are selected from Brown's study (3) of the thoughts and reasonings of children:

A child five or six years of age, after having visited with her father a mill in which some rather noisy machinery was in operation, came to the conclusion that up in the sky there must be a lot of machinery which God puts in motion whenever He wants thunder. A four-year-old boy desired to be permitted to go out in the rain because it would make him grow. A five-year-old girl exclaimed, on seeing a crooked tree: "Oh, see that tree sitting down!" Another five-year-old reasoned that because a person's eyes were gray she was getting old. A seven-year-old boy concluded that

toads have rheumatism because they hop. A five-year-old boy, upon seeing an electric light being set up in front of his home, informed his mother that God would not have to make the moon any more. A six-year-old girl reasoned that when God wanted rain He pulled a string, like the string on the shower bath in her home. A seven-year-old, on being asked in the morning by his aunt whom he was visiting whether he had said his prayers the night before, replied that he had not. His aunt warned him that he must always do so, or else God would not take care of him. The child replied: "Well, he did." A four-year-old girl saw some plaster dogs in a store and asked if they were alive. On being told that they were not, the child replied: "But they are standing on their feet."

You can very likely add to these illustrations of children's thinking and reasoning powers scores of other incidents which you have observed for yourself. Remember that in his feverish attempt to increase and clarify his knowledge every child *thinks*, however rudimentary may be his thinking. Slowly he is adding experience after experience to his previous store, and thus slowly building up systems of concepts and bodies of related facts and ideas and principles which will later represent his basis for added study and thought.

TOPICS FOR SPECIAL STUDY AND REPORT

1. Discuss the development of the child's concept of *chair*; of *house*; of *obedience*.
2. On the basis of the illustrations of children's reasonings mentioned above, determine whether inductive or deductive reasoning is the natural form of reasoning which the child employs. Can you explain why this should be so?
3. Enumerate six reasons why children reason so falsely or so naively.
4. Be on the watch for any illustrations of reasoning which children do. Report any instances in class.

THE LESSON APPLIED

1. In what definite ways does the socialized school foster the development in the pupils' minds of dependable concepts of good citizenship?
2. Determine the probable pedagogical value of the teacher's repeated admonition to "Think!" or "Think hard!"

3. Is the ordinary school guilty of failure to stimulate to the uttermost the thinking powers of children? Is there any considerable likelihood among teachers that the children's thinking will be done for them?
4. Which of the reasoning methods is best adapted to the teaching of lower grades? Of intermediate grades? Of higher grades?

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LESSON 39

WILL AND MORAL DEVELOPMENT

What to look for in the observation period:

1. (In the lowest grades) Evidences of the absence of any real appreciation of morality. (In the other grades) Evidences of dawning morality and a moral code in the children as individuals.
2. Any case in which the children's behavior would seem to indicate very slight, if any, notions of what constitutes right and wrong.
3. In how far it appears to be one of the aims of the school to inculcate in the minds of the children ideals of conduct and regard for justice and right.

What is the moral condition of the child at birth? Cotton Mather, the eminent Puritan divine, appealed thus warningly to the boys and girls of his day and generation: "Ah, children, be afraid of going prayerless to bed lest the devil be your bedfellow. Be afraid of playing on the Lord's Day lest the devil be your playfellow. Be afraid of telling lies or speaking wickedly lest that evil tongue be tormented in the flames when a drop of water to cool the tongue will be roared for."

The attitude which this appeal of Cotton Mather reflected was the attitude generally held regarding the nature of children a few generations ago in Massachusetts. It was based upon the so-called "doctrine of human depravity" or of "original sin," which averred that every child was essentially an immoral being whose only hope of salvation lay in a strict diet of the Catechism and the Scriptures. Jonathan Edwards referred to children as "young vipers," while Cotton Mather, in another place, refers to them as "children of wrath." Even the schoolbooks of the time contained little else than a continual harping upon the original depravity of boys and girls. Thus, the last selection in the

old *New England Primer* was a dialogue between Christ, a youth, and the devil. The youth resolves to spend his time in sport and play and to disobey his parents, to the great delight of the devil. Christ tries to persuade the youth to change his mind, assuring him that the devil lies and that his ways are deceiving. As the youth is reticent, Christ affirms that he will be burned in hell. In reply the youth suggests that he knows that Christ has mercy; that it will be easy to repent when he is old; and that all his sport and play will speedily come to an end. The youth laments and begs for mercy, but Christ replies:

No pity on thee can I show,
Thou hast thy God offended so;
Thy soul and body I'll divide,
Thy body in the grave I'll hide,
And thy dear soul in Hell must lie
With devils to eternity.

And this is the sort of cheerful, positive instruction to which boys and girls were a few years ago subjected! An appeal to fear, rather than an appeal to more positive motives to be good. Still, who shall say that the stern virtue and strict morality of the early founders of our country, which were the logical outgrowths of such instruction, were not the surest and most abiding heritage which they have handed down to us?

The viewpoint of the time was that the moral nature of every child born into the world was actually vicious and inherently bad. Hence all the energy of which the school masters and school dames were capable was directed toward redeeming them from sure and inevitable wrong and future suffering.

Somewhat more recently another viewpoint of infantile moral nature has grown up. Stimulated by the poets, notably Wordsworth and Rousseau, and by such novelists as Charles Dickens, many people have embraced the opposite conceptions of original child nature. We may apply to this theory the doctrine of original perfection, which states that

the child at birth is essentially *moral*, virtuous, and good. The infant is, as Dickens says, so charmingly "fresh from the hand of God," and hence perfect in morality.

As a matter of fact, it is rather true that neither of these doctrines is correct. The infant at birth is neither moral nor immoral, but rather *unmoral*, neutral — neither the one nor the other. It is like a perfectly balanced scale, however, ready to tip in either direction according to the influences which are brought to bear upon the one side or the other. Whatever of good or virtuous or positive that it absorbs from its environment and early training will tend to make for morality; and, conversely, whatever of bad or vicious or negative its environment suggests will make for the opposite condition, immorality. In other words, the infant's moral nature, like its mental, is a sort of *tabula rasa*, as Locke suggests, a blank page upon which the records cannot begin until the child itself begins them by experiencing and reacting to its experiences.

The bearing of heredity. And yet we cannot assert that "all men are created equal," in a literal sense, for that would imply that every infant has the same *innate tendencies* toward morality that every other infant has. Such an assertion fails to take into account the influence of heredity upon future moral behavior. You have observed time and again among your acquaintances the insidious immoralities of the parentage dropping out in the children; just as you have also observed time and again the positive moral reactions of the parentage tending to appear in the children. In the next lesson we shall see how tremendous is the power of heredity in the matter of juvenile criminology and delinquency. It should be remembered, on the other hand, that it is extremely difficult to ascribe exact responsibility for the behavior of a child to heredity, for that would be leaving out of account the power of environment, which, as we have seen earlier, is very great. Perhaps the most satisfactory statement that we can make is that, owing to rather wide differences in the heredity of children from a

moral viewpoint, *it is easier for one to tend toward moral behavior, and for another to tend away from it.*

What constitutes a moral code? But the chief determinant of a moral code of a boy or girl is the habitual reaction which they make to their training and environment. One's moral code is, therefore, leaving out the matter of heredity, built up upon the ease with which one's environment can be manipulated to make possible improper moral responses (or the strictness with which it points to inevitable moral responses), upon the habits which are thus favored, and upon the consequent weakness or strength of the will. We may think of the first of these three factors, the ease or strictness of environment, as the *social basis* of morality. On the one hand, if there is little parental oversight of the play and amusements and *extra-home* and school activities of the child, or if in consequence of that negligence of the home, it is easy for the child to drift into bad associates, or if within the home itself there is in evidence bad or improper influences, such as disputes between father and mother, deceitfulness on the part of either, vicious or improper conversation or acts done before the child, etc., the social basis points inevitably toward the opposite of morality. On the other hand, if there is a wise oversight on the part of the home of the activities of the child, to the end that associates are wisely chosen and the home influences and *extra-school* activities are positive and constructive in nature, the social basis makes just as inevitably for morality.

In the second place, the habits which are formed in childhood are very significant factors in the building up of the child's moral code. We have already noted in earlier discussions that most of the habitual responses of children are but modifications or sublimations or redirections of the fundamental instincts. Among the more important of these instincts which make for morality may be mentioned ownership, curiosity, the migratory response, teasing and bullying, and imitation. If any one of these is allowed to "run riot," without proper training into wise habitual

responses, moral degeneration is sure to result. Take, for instance, the first of these instinctive tendencies: ownership. It is the conclusion of two investigators that "the desire to own is one of the strongest passions in child life; that selfishness is the rule; that children steal, cheat, lie without scruple to acquire property; that they have no idea of proprietary right." What greater danger could there be to a child's moral code than this impulse which hesitates at nothing to obtain possession of something which may chance to be desired. It is difficult, in the light of this testimony, for children to appreciate what the difference is between "mine and thine," hence stealing becomes a natural habit unless there is proper direction of the instinct to own. And so with *curiosity*. The mere desire to experience something may inspire a child to commit multitudes of wanton acts of a destructive nature. One writer, for example, cites the illustration of the eight-year-old girl who set fire to a house "to see the fire burn and the engines run!" Doubtless from your own observation you can furnish other illustrations of the destructive side of the curiosity instinct. And then, perhaps most serious of all in its destructiveness, is the curiosity which centers around the sex instinct. Look through your daily paper and note the number of crimes and outrages committed directly at the dictation of the sex instinct. Unless the greatest caution is exercised by parents the all-compelling power of this subtle force may operate to inspire the child to form those habits which will blast his whole future, or at least restrain him from attaining to that state which is rightfully his in human society.

On the side of the migratory tendencies so strong in the breast of every child there is likewise danger. Truancy may become a habit, and with it, in order to conceal it, may develop the habit of lying and deceit. Along with it, too, come associations with other children whose vicious natures may be positively ruinous to the child cohabiting with them for a season. Thus, the simple *Wanderlust* may result in a vicious circle, and make for the reverse of all that

is good and virtuous in the life of a boy who responds abnormally to it. Teasing and bullying tendencies, if abnormally encouraged, may result in a hardening of all finer emotions and a stifling of all sympathy and feeling for others in a child, which may easily be favorable to the perpetration of all manner of crime. And so, too, the imitative impulse, whether reflex or acquired. Especially the studied imitation is fraught with dangers. Children do what others do. They do what they hear or learn of others doing. Witness, by way of illustration, the uncensored moving picture of the more sensational sort, in which safe-blowing and theft and personal violence and underworld ways and a score of other equally vicious examples are displayed before the staring eyes and the bursting minds and restless bodies of boys and girls. And then there is the "burlesque" show and its lurid posters outside to attract the curious eyes of children to the undress and often indecent attitudes of the actors within, all of which cannot but excite the sexual and imitative tendencies which may become firebrands in the hands of immature and curious boys. We may repeat, then, what we said above; namely, one of the chief determiners of a child's moral code are the habits, or the *redirected instincts*, which he forms naturally and inevitably from the environmental forces playing upon him.

Growth of will power. Growing out of the habits which a child forms is the third element in his moral code — his *will power*. A child does not live long surrounded by all manner of environmental influences before he begins consciously to pay attention to many of them, and voluntarily choose as to what this or that response shall be. When he has reached this stage his will is beginning to be a factor in determining his moral code. In pretty nearly every response which mortals are called upon to make there is a right and a wrong. When the child is able to appreciate this niceness between possible responses to a given situation he is no longer a creature of circumstance, but a creature

of will. For example, the eight-year-old may have two alternatives open to him; he may go fishing with his gang, or he may remain at home and mind the baby while his mother passes an afternoon of rest at a neighbor's. Which shall he do? Surely the normal, healthy boy will *naturally* do the former; it is only when he is older and can appreciate what past work and present fatigue and sacrifice for him, on the part of his mother, mean that he can choose of his own accord to deny himself and do the less tasteful thing. The exercise of will power depends, therefore, in the first place upon information or knowledge. Until a child has had sufficient experience he cannot choose intelligently. In the second place, exercise of the will depends upon an attitude of thoughtfulness toward the problem of the moment. A child may have had never so much experience, but if he has never reacted thoughtfully to such experiences he cannot be in any position to exercise his will power. Given these two conditions, experience and thoughtful reaction to it, and provided the environmental forces have been right and the habits formed in consequence wise, the beneficent exercise of will is inevitable. The child so possessed and so actuated cannot but act wisely and well, provided of course he *does* act and is not content to "dream noble deeds all day long."

Stages in Moral Development. (a) *Infancy.* Infancy, as we noted above, is the non-moral stage. The experience of the child is so limited and his abilities and possibilities of habit-forming so restricted within very narrow range that there is little positive morality or negative morality likely.

(b) *Early childhood.* In early childhood, that is, previous to the school age of the child, there is still little opportunity for any special development of the moral nature. The social environment in which the child moves is but the environment of the home; the great outer world has not yet cast its spell about him either for good or for bad. But the foundations are being laid during this period, and the home which fails to surround the children with good influ-

ence and example will discover to its sorrow later on that an irreparable injury has been done. Right or wrong during the period of early childhood is largely, as Waddle suggests, what is permitted or forbidden. The will which rules the child's action is not his own, but his father's and his mother's and that of his brothers and sisters. Beyond this his own actions seldom extend.

(c) *Later childhood.* Waddle speaks of this third stage in the evolution of the child's moral nature as a sort of transition between the earlier period of doing what one is told and the subsequent one of doing what one himself feels to be right. It is an age of "verbal morality" wherein children can very glibly cover up their actual motives and feelings with a semblance of genuine morality. There are certain things which the child now habitually does because he feels them to be right, or avoids doing because he feels them to be wrong, such, for example, as being polite in the presence of guests, or the inhibiting of the same amount of close intimacy between the sexes as distinct from the earlier thoughtlessness in this respect. And yet, there is no real standard of morality in this period. The same child will tell an untruth to another child or to some one whom he chances not to like, who would not think of deceiving his own mother. His moral values are relative rather than absolute. He has not yet reached the stage where he can appreciate truth and virtue for truth's and virtue's sakes.

(d) *Adolescence.* Now comes the dawning of the real moral self and of the personal values of ethical relationships. It is the very important period of life in which the instincts, not yet entirely in the control of wise and proper habits, and the dawning conscience, wage out an often bitter warfare with one another, with the result that either the one or the other wins. It is the one period of life above all others in which the gravest dangers to the future moral code of the individual lurk. Inasmuch, however, as we are shortly to devote an entire lesson to a study of this period, we shall not discuss it further here.

TOPICS FOR SPECIAL STUDY AND REPORT

1. Go hastily through a copy of the old *New England Primer*, or some other early textbook for young children, and note the emphasis which is placed upon the doctrine of human depravity. Also, see if you can find in Wordsworth any poem which stresses the original perfection of children.
2. Do you know personally of any cases in which the moral nature of a child has been unfavorably influenced by the social environment in which he lived?

THE LESSON APPLIED

1. Do you believe that we should introduce into our schools definite moral instruction, or is it your opinion that incidental or indirect instruction of this sort should be sufficient?
2. Is there necessarily any relationship between moral instruction and religious instruction? Ought there to be religious instruction in the public schools?
3. The instincts of ownership, curiosity, and the *Wanderlust* are among those inborn tendencies which are more commonly uncontrolled in childhood, and hence lead often to great moral danger. Should the school make special effort to provide normal satisfaction for these instincts? In what ways might this be possible?

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LESSON 40

THE JUVENILE DELINQUENT

What juvenile delinquency is. You have doubtless very frequently seen in the daily press accounts of boys, and sometimes of girls, whose actions have been such as to bring them into the disfavor of society. Petty theft, injury to property, rowdyism, and the depredations of badly constituted gangs are among the activities which are perhaps most frequently entered upon by the delinquent. For the adult who had offended society and broken its laws in such ways as these ordinarily a prison sentence would be pronounced, and he would be considered a criminal by his fellows. When, however, the existing laws and customs are broken by a younger person, i.e., a person who is, in most states, under sixteen years of age, the term "juvenile delinquent" is applied to him. "Juvenile" because he (or she) is still a youth; "delinquent" because such an offender has literally been "left behind" in his moral development. Whereas other boys and girls have passed through childhood and into youth without actually trespassing seriously upon any law, the juvenile delinquent has failed to so do, with the result that his moral nature has suffered, and he has been "left behind" in his normal evolution by his more conforming fellows.

Until somewhat recently, however, even the youthful law-breaker was looked upon as a criminal and so treated by society. He was ordinarily placed under restraint in an institution, and thus segregated from the group in order that his contaminating influence might not be exercised upon other children. The results of such a system of discipline obviously failed to be very salutary upon the moral development of the youth so placed under restraint, for he was thrown necessarily in contact with other law-break-

ers, often adult criminals of the most vicious sort, with the result that, far from being made over into a good citizen, he imbibed from the hardened offenders ideals and attitudes toward society which impelled him, upon his release at the expiration of his sentence, to degenerate into the life and manner of living of the confirmed criminal. Many a child who, because of breaking one of society's laws has been thrown thus in contact with men of hopeless degeneracy, has from such intimate association learned for the first time to rebel against society and the moral law, and has left prison with a heart hardened to every fine principle and every lofty ambition. It has been the discovery of this unfortunate influence upon the youthful criminal that has led society in recent years to refrain from calling such an offender a "criminal," and from placing him in some penal institution where his tendencies toward crime would find additional nurture by the associations there formed. Consequently, your modern youthful law-breaker is termed a "juvenile delinquent," and in most cases is not actually placed under constraint.

Improper stimuli. We have referred continually in this book to the inevitable relationship between the stimulus and the response. The explanation of the cause of juvenile delinquency lies in this same relationship. If the stimuli which make up the social environment of the child are vicious and encourage offenses, the results are inevitable. Social imitation, as we have seen, is a social necessity. If the examples furnished by parents and gang and books and amusements be unsalutary, unsalutary responses will tend to result. If the environment of the child contains a Fagin, the habits and manner of living peculiar to Fagin will fasten themselves upon nine out of ten children. Where does the boy learn to pick pockets or to commit crimes against the person save by imitating the bad example rather than the good of his environment? If an environment fails to modify and redirect properly the racial heritage of instincts which exist so strongly in every child, potential criminality

will be the logical sequel. Swift contends rightly that "a period of savagery and semi-criminality is normal for all healthy boys," the only reason that not all boys continue therein being due to differences of environment, the child of the vicious environment tending to be vicious, while the child of the healthy environment tends away from it. Jane Addams refers to juvenile delinquency as "instincts gone wrong"; i.e., because the normal instincts of play and self-activity, etc., find no opportunity for normal expression, they seek it in abnormal and therefore usually vicious ways.

Miss Addams quotes the following list of charges, as they appeared in order in the Juvenile Court of Chicago:

1. Building fires along the railroad tracks.
2. Flagging trains.
3. Throwing stones at moving trains.
4. Shooting at the actors in the Olympic Theater with sling-shots.
5. Breaking signal lights on the railroad.
6. Stealing oil barrels from the railroad to make a fire.
7. Taking waste from an axle-box and burning it upon the tracks.
8. Turning the switch and running the street car off the track.
9. Staying away from homes to sleep in barns.
10. Setting fire to a barn to see the fire engines come up the street.
11. Knocking down signs.
12. Cutting a Western Union cable.

Surely nothing here save "instincts gone wrong"! The instincts of general physical activity, of play, of migration, of curiosity, etc., failed in the case of those delinquents to have normal, happy expression, hence they took the vicious route to find satisfaction for themselves. It is hard to see how a child who had had opportunities for normal play could have cared to commit the acts here enumerated. Give the city child his playground and see the beneficial results in the law-abidingness of the boys and girls!

The defective delinquent. The term "defective delinquent" is applied to those juvenile law-breakers who are

mentally defective. Exactly what part feeble-mindedness or mental abnormality plays in crime we do not yet know. A considerable number of studies of the defective delinquent and the defective adult criminal have been reported, however, all of them indicating a marked correlation between the mental condition and the moral condition of any given person. Goddard states that mental defectiveness is hereditary in sixty-five to seventy-five per cent of the cases; other investigators incline toward much the same opinion. The feeble-minded child is lacking in ability to foresee the results of his deeds either to society, to the person injured, or to himself. His moral judgment is almost *nil*, and very often entirely so. In him the lower instincts are of full strength, without the inhibitions existing whereby to set back fires to them, so that to *desire* means usually to *carry out*, and some of the most heinous of all crimes committed are those perpetrated by idiots and imbeciles utterly without moral sense. In many instances nowadays the State refuses to take the life of a criminal who has committed murder if it can be established that the evil-doer was morally and mentally incompetent to judge of the enormity of his crime, or perhaps indeed to view it as a crime while contemplating it. Recent studies show insanity and epilepsy in the parents to be heritable, and that they result often in delinquency of the children of such parentage. Alcoholism and abnormal sexual tendencies may also predispose to delinquency.

Modern methods of dealing with delinquents. We stated above that the older attitude toward the youthful offender did not differ materially from that toward the adult criminal. Both were breakers of the laws which society had formulated whereby to protect itself from the evil passions of the few who are criminally inclined in every age. Hence the same sort of treatment at the hands of the law was vouchsafed to both the new and the confirmed offender, with the unfortunate results stated. The chief reason for this earlier attitude of society is to be sought in the igno-

rance which prevailed as to the real nature of children. The older judges and prosecutors failed to understand that every offender against the law is the victim of circumstance, and that the only way to reform him is to surround him with the proper, positive environment before it is too late. The proper environment does not consist of the nondescript criminals in the average penal institution, whose example and conversation will but confirm and strengthen the youth in his waywardness. Hence in modern times society looks with disfavor upon such disposition of its juvenile delinquents.

Modern disposition of youthful offenders, therefore, bears always in mind the nature of children, the inevitableness with which response follows stimulus, and the relative plasticity of children's morals, and looks upon each delinquent as an *individual problem*. The sort of discipline therefore meted out in any given case, according to modern conceptions of justice, will be the discipline which will offset or counteract the vicious tendencies of the individual, and encourage within him the expression of the more positive, constructive virtues. Hence, instead of placing the delinquent child in jail, or even in a reform school (called by Miss Madeleine Z. Doty a "deform" school), the juvenile court judge, who, by the way, differs from the ordinary judge by being a child psychologist, as well as a believer in and lover of children, endeavors to enlist the sympathetic attitude of the home and the employer and perhaps the neighbors of the wayward child, to the end that the environmental influences may be made better. In some cases he may deem it necessary to place a child on probation, that is, assign a special officer to have oversight of a youth's associations, who shall be held also responsible for his good behavior and for constructive efforts in his behalf. Failing to respond to such generous treatment, and to the opportunities offered by "another chance," the delinquent may have to be committed to a reform school where at least he will be unable to harm society further, and where more con-

centrated efforts at reform may result happily for the offender. It is the experience of most cities where juvenile courts have been established and where such procedure has been inaugurated, that only a relatively small percentage of delinquents require commitment to a reform or corrective institution. Still, owing to hereditary predisposition or to particularly vicious and long-standing associations of childhood and youth, many delinquents can only be dealt with in this more drastic manner. In other words, the whole ideal of the modern attitude toward the delinquent is to make over through sympathetic treatment and intelligent guardianship the boy or girl who has become the victim of a bad environment, or who is the innocent victim of a bad heredity. For the former there is great hope; for the latter, less.

Environmental factors in delinquency. Among the environmental factors which may make for delinquency in children may be mentioned poverty and poor economic conditions of the home, failure of the home to manifest the proper oversight and supervision of its childrens' activities and amusements, etc., the associations of child labor and the so-called "street trades," the influence of bad gangs, etc. Each one of these factors may be sufficient to undermine the morals of a none-too-well-endowed child, and even of children of fine parentage. If two or several such influences as these operate in combination upon the resistance power of a child the outcome is all but inevitable. Take the first of these factors for example — the child nowadays who has no spending money and who finds little of the comforts common to other children in his home or who, coming from a good home which exercises but little authority and solicitude for its children, is free to amuse himself as he sees fit, drifts easily into dissipation and waywardness of some sort or other. If the economic conditions of the family are such that the child is compelled to go to work at a tender age the potentialities of his environment are almost inevitable, and it is a fact well established by statistics

that "among the young delinquents there are two or three times as many persons following a trade as among non-delinquents." One investigator concludes that approximately sixty per cent of the working delinquents are engaged in the street trades alone. Of the influence exerted upon the plastic minds and morals of children by bad gangs, and of the tremendous influence exerted by the habitual forms of amusement which they seek, we have already said enough. Suffice it here to add merely that of all the factors making up the environment of the child the associates and the amusements are without doubt the most important in the influence which they exert.

Nature of offenses. Some years ago President Hall arranged a table on the basis of the returns to the Census of 1890, which showed the nature and distribution of the offenses of children and youths of both sexes who were committed to reform schools between the ages of seven and twenty-one years. The order of greatest frequency he found to be incorrigibility, petty larceny, vagrancy, larceny, burglary, truancy, disorderly conduct, assaults, etc. Waddle has painted for us a very good picture of the typical delinquent, thus:

As he appears in our juvenile courts the country over, the typical delinquent is a boy (eight or nine times out of ten); he is approximately fifteen years old; is slightly under the normal height and weight for his age; may have one or more physical defects of a fairly serious sort, but is probably not more seriously defective than the average public school child (nine times out of ten); his schooling has been more or less interfered with by various causes; his intelligence is normal (three times out of four), although he may be a dull-normal or border-land case; he has been and probably still is engaged in some form of the street trades or other occupation for gain; he does not care much for school, and will quit as soon as the law allows, if he has not already done so; he is a member of a gang; is native-born of native-born parents; his home ranks somewhere between the very poor and that of the comfortable working class; the chances are even that one parent is dead, has deserted, or that the parents have separated, and that

one parent is addicted to drink; if there are several other children in the family he has one brother or sister who is delinquent; the charge against him includes some sort of theft, and he has been guilty of more than one offense; his condition is due one-fourth to family inheritance and three-fourths to environmental causes, of which the influence of his gang is an important element. . . .

Such is the typical delinquent child.

TOPICS FOR SPECIAL STUDY AND REPORT

1. Look up some of the chief facts concerning the organization and work of the juvenile courts. Judge Lindsey's Denver court will prove a very interesting topic to investigate.
2. Report to class any case of juvenile delinquency which you may know. If possible try to analyze the cause. What remedies are being tried? Are they wise ones?
3. Study the latest report of your own local reform school. If possible, make a visit to the institution and observe something of the ideals which appear to be in evidence. Question the superintendent concerning the nature of the offenses which the inmates have committed.
4. Read and report upon two chapters in Jane Addams's *Spirit of Youth and the City Streets*, also two chapters from Jacob Riis's *How the Other Half Lives*.
5. Make a study of your own community, and try to form an intelligent conclusion as to whether or not there are ample facilities provided to keep young people out of mischief.

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LESSON 41

THE SUB-NORMAL CHILD

What to look for in the observation period:

1. Whether any of the children appear to be retarded. Question the teacher concerning any such children observed. Note any peculiar physical or mental characteristics which such children manifest.
2. Any indications that the presence in the grade of a distinctly and definitely sub-normal child interferes with the progress of the other pupils or with the work of the teacher.
3. Ascertain from the teacher whether any children in the room have been tested by the Binet, or other tests, for the purpose of determining their mental age.

Normality a relative term. It is very likely true that you have been accustomed to think of all people as being divisible mentally into two classes — the normal and the feeble-minded. Such, however, is not the case. It is rather the fact of the matter that every person in the world ranks somewhere upon a scale whose one limit is idiocy and whose other limit is genius. The great mass of mankind will rank somewhere in the middle portion of the scale, according to the law of deviation from the normal which we discussed when we were studying heredity. But there will be a very large number whose place will fall somewhere between the idiocy extreme and the average, on the one hand, and between the genius extreme and the average, on the other. Normality is, in other words, but a relative term. Most of us are more normal than we are sub- or ab-normal, and so we pass as normals. Others are more abnormal than normal, hence they pass for abnormals. It has been said that all of us are abnormal in some particulars, which statement is very likely true; since, however, those respects in which we are normal outweigh those in which we are abnormal, we think of ourselves as *normals*, and we are deemed by our fellows to be

such. Can you think of any respect in which *you* are not normal? Thus, the law of deviation from the average in the matter of mental capacity holds true of the *individual*, just as it does for the *mass* of individuals. It is important to be familiar with this idea of the *relativity* of normality before we undertake a discussion of the mentality of children.

An important distinction. In your visits among the schools of your city your attention has no doubt been called frequently to certain of the children whose reactions did not appear like those of other children. Perhaps they were more restless, or were unable to pay attention to the teacher, or failed to take any intelligent part in the lesson, or were not able to learn or interpret lessons taught. It may have been that their facial expressions were dull and gross, that their movements were awkward and ungainly, that their natural interests did not appear to be keen like those of their fellows. Possibly, too, you were conscious of the fact that the teacher either endeavored to pay special attention to such children, or perhaps tended to neglect them. You were aware that the other children in the room appeared to "take for granted" these sluggish and backward children, and manifested little interest in or solicitation for their feeble attempts at participation in the work of the school-room and the playground.

It may be that you made the very serious mistake of cataloguing in your own thoughts such children who deviated so markedly and conspicuously from the average as *feeble-minded*. If so, then you did them an injustice, inasmuch as you have no right to look upon any child as sub-normal until he has been definitely proved to be such. An important distinction has to be made between the child who is actually deficient mentally, and the child who is merely retarded because of some environmental and remediable cause. The former child can profit relatively little if anything at all from the associations of the schoolroom; the latter may profit from them to the fullest degree, pro-

vided his environmental obstacles and hindrances be removed. It is with the former type of child that this lesson has to do. However, it will be well before turning our attention to the feeble-minded child to pause to gain a little clearer idea of the child who is retarded in his school work, not because of any inherent sub-normality, but rather as a result of unfortunate and remediable environmental influence.

Some of the more common environmental factors which make for retardation of the pupil include unfamiliarity with the English language; frequent or severe illness which necessitates a great deal of absence from school; irregular attendance, due to causes other than illness, such for example as the moving of the family from place to place, outside work, etc. The child, for example, who has language difficulties, another tongue than the English being used in the home by foreign-born parents, may be several grades behind where he should be for his age. He finds it difficult to understand the teacher, and more difficult still to express himself to her. Consequently he is classified as a retarded pupil. How absurd it would be to classify him as a sub-normal! So with children who because of illness or some other condition which makes it necessary for them to lose considerable portions of the school year; they are necessarily retarded, for those children of equal age whose attendance has been regular will be from a half to one, two, or perhaps three grades ahead of them. How absurd it would be to term *such* sub-normal! Every one of the possible causes of retardation — with the sole exception of actual mental deficiency — is capable of being ruled out if the environment be properly manipulated to that end. The child who is held back because of any one of them, or because of several of them operating simultaneously, is the victim of extraneous circumstance and may be absolutely and completely normal — or even brilliant — mentally.

Causes of mental defectiveness. In this lesson, how-

ever, we are to consider only those children who are retarded in their school work by actual mental deficiency, and for whom consequently little can be done in the way of helping them to advance like other children through the grades. There are two general causes of feeble-mindedness: (1) heredity, and (2) accident. Most cases of defectiveness in children are due to the former influence. You recall the story of the Kallikak family, about whom we studied in our discussion of heredity, and you recall also that mental deficiencies are hereditary. In general it may be said that parental lines in which there exist traces of insanity or epilepsy or confirmed alcoholism are likely to pass down in their posterity children whose mental powers are deficient. It is estimated that some ninety per cent of all defectives are deficient because of hereditary influences. Nervous disorder of any marked sort in parentage is likely to be reflected in offspring, as is also certain physical defectiveness, such for example as sex diseases. The child of syphilitic parents may be either physically degenerate, or mentally so, or both. The other ten per cent of mental defectiveness is due to such accidental causes as alcoholism of the mother during pregnancy, injuries of the head received either before, during, or after birth; defective glandular action which interferes with nutrition and normal physical growth; and toxins resulting from some disease suffered in early life. Obviously these latter causes of mental defect are *accidental*, rather than *hereditary*.

Classification of defectives. The term *feeble-mindedness* tells us nothing as to the *degree* of mental defectiveness which a child may have. It is rather a somewhat generic word including in its scope all grades of deficiency from the lowest to the highest. We said above that normality is a relative term; it follows from this that sub-normality is likewise a relative term, and hence it is desirable to have a nomenclature applicable to all forms or stages of the defect. When we say "feeble-minded" we are likely to mean only those people who are *very* sub-normal; i.e., idi-

otic. The term *ament* has been somewhat recently applied to denote mental deviation from the normal on the lower side of the scale, and the term *amentia* is defined as "a state of mental defect from birth, or from early age, due to incomplete cerebral development, in consequence of which the person affected is unable to perform his duties as a member of society in the position of life to which he is born."¹ Feeble-mindedness, or *amentia* (Latin: *a* and *mens*: "off in mind"), is further divisible into three degrees, depending upon the *relative* inability of the person "to perform his duties . . ." etc. You have certainly observed that there are some people who are more able to care for themselves and their families than are others, while you would perhaps hesitate to think of them as absolutely normal people. The lowest degree of *amentia* is known as *idiocy*. The idiot is so defective that he is utterly unable to guard himself from common physical dangers; his mentality has been defined as not being in excess of that of a two-year-old infant, however old he might live to be. The next higher in the scale of *amentia* is the *imbecile*. An imbecile is considered to be one who, while able to guard himself from the physical dangers which threaten him, is quite unable to earn his own living; his mental age does not exceed perhaps that of a seven-year-old child, however old he may live to be. Highest in the scale of *amentia* comes the so-called *moron*. A moron is able with proper training and oversight to earn his own living, to protect himself from common dangers, but is at the same time totally unable to compete with normal people in the management of his affairs and in the ordering of his life. His mental age is perhaps that of a twelve-year-old child, and never goes beyond that, however long he may live.

Above this stage there ensues, on the scale of normality-abnormality, a condition which may be termed the *borderland*. Persons belonging at this point on the scale are not positively *aments*, nor are they quite normal. Or, looking

¹ After Tredgold.

at it from the point of view of normality, they are not positively normal, nor are they quite abnormal. Beyond this border-land of normality ensue all the varying degrees of strict normality, ranging upward to the genius or the highly talented person. Somewhere on the scale every person ever born into the world will finally become fixed, those who are by heredity or accident positively deficient coming to their point very quickly, the rest of the people of the world always having potentialities and possibilities of improvement and hence attaining a higher place upon the scale. In this lesson we are not to concern ourselves with the *super-normal* child, nor the child whose mentality ranks him more nearly at the genius end of the scale than at the other. It is important, however, that you appreciate that for every ament there is a corresponding super-normal, relatively speaking, and that you will find in the schoolrooms where you teach not only children of the former mental condition, but also a few of the latter.

Testing the mentality of children. Suppose a teacher has among her pupils in the fourth grade (the average age being approximately ten years) one child who is below grade; that is, who falls short of the attainments of the average children in the class. Naturally she desires to know what the reason is for his backwardness, in order that she may know how to deal with him. If he be merely retarded because of some physical or environmental factor which is capable of remedy or correction, it will be highly unjust for her to deem the child to be an ament. If, on the other hand, he be positively deficient mentally she should know that, too, in order that she may not continue longer to deprive the normal pupils of her time and attention. If the child is a sub-normal the place for him is in the special class, or the ungraded class, which most school systems now provide for such children who cannot do the work required in the system, and where they may receive the full benefit of expert teaching. Hence the matter of determining as accurately as possible the *general intelligence* of such chil-

dren as are below grade becomes a positive necessity if justice is to be done both the normal and the sub-normal pupils. This becomes particularly indispensable in the case of those children who have been physically and medically examined and in whom no bodily deficiencies are found, and yet who remain one, two, and perhaps three years retarded.

The Binet tests. Fortunately there has been worked out in recent years a series of mental tests which are intended to establish more or less exactly what the mental age of the child is. He may be ten years old by the calendar (chronological age), and yet be no more than six mentally (psychological, or mental age). Or again, he may be ten years old chronologically and yet have a mental age of eleven or twelve. The working out of tests to determine the mental age of children we owe originally to two French investigators, Binet and Simon. These are usually referred to as the Binet tests.¹ The tests are made up of a somewhat extended series of tests or problems, graded according to the average abilities of normal children in any age from three years up to fifteen. The tests were arranged by the investigators in the order of difficulty, after trying them out upon a great many normal children between the ages stated. If, for example, two thirds or three fourths of all five-year-olds were able to solve a given problem, that problem was put down by Binet as a problem which five-year-old children of normal intelligence should be able to answer correctly, the inference being that those five-year-olds who could not solve it were of a mental age lower than five years. Naturally a single problem would not be sufficient to warrant any conclusion as to mental age; hence Binet arranged five tests for each age-year (excepting age-year four, which had but four problems) from three up to and including fifteen, with an added list of five for adults, making a total of fifty-four tests in all. The nature of the problems which were originated is such that no attempt is made to test any *specific* ability of a child,

¹ Pronounced *Bee-nay*.

but rather his *general intelligence*. They appeal to the innate ingenuity and reasoning powers of the child rather than to his lower sensory processes.

The Stanford Revision. The work of Binet was obviously not altogether satisfactory; no first stage in the development of any scientific process can be entirely adequate. Hence there have been several attempts to revise and improve and adapt to American children the tests which Binet originated. Perhaps the one revision most generally in use in this country to-day among psychological investigators is the so-called Stanford Revision of the Binet Tests. It is the result of the labors of Dr. Lewis M. Terman, of Leland Stanford, Jr., University, whence it derives its name. With his collaborators, Dr. Terman was led to modify somewhat, as a result of an extended use of the original tests, some of Binet's tests, to shift several of the problems down one or more years, to eliminate some of them entirely, and to substitute several new ones. As a result, the Stanford Revision as used at the present time contains ninety tests, of which six occur at each age level from three to ten, eight at twelve years, six at fourteen, six at "average adult," six at "superior adult," and sixteen alternative tests (the latter to be used only when "one or more of the regular tests have been rendered by coaching or otherwise undesirable").

As one glances over the tests provided, he will note that the problems call for general intelligence, for reasoning ability, for ability to pay attention, etc., that is, they are designed to test general mental ability and not special powers. The nature of the testing is such that only trained examiners should be employed to give the tests to children with the purpose of determining their mental age. While many teachers have learned to apply them, the teacher should by no means consider herself capable of evaluating the results in any case until she has had a great deal of experience in their use. It would be absurd for a person who was acquainted only in a casual way with anatomy and surgery to proceed to perform surgical operations in which a pa-

tient's life was at stake. Likewise it would be absurd for the ordinary teacher with a mere passing knowledge of mental testing to attempt to diagnose the mentality of children. Perfect familiarity with the materials, a very keen judgment, and much ingenuity are necessary in the administering of the tests.

Tests for the ninth year. The following represent the six tests in the Stanford Revision for the ninth year, and are typical of the ninety in the whole series:

(Six tests, value of each two months.)

1. Date. (Day of week, month, day of month, year.)
2. Weights. 3, 6, 9, 12, and 15 grams to be placed in order. (Two or three results to be correct.)
3. Makes change. (Two of three. No coins, paper or pencil.) 10 less 4; 15 less 12; 25 less 4.
4. Repeats 4 digits backwards. (One of three trials to be correct.)
5. Three words woven into a single sentence. (Two of three.) Boy, river, ball; work, money, men; desert, rivers, lakes.
6. Rhymes. (Three rhymes for two of three words. One minute for each part.)
Day, mill, spring.

Alternative 1: Months. (Fifteen seconds and one error in naming.)

Alternative 2: Stamps, give total value.

The intelligence quotient. Since there are six tests in each age group from III to X, each test in this part of the scale counts as two months toward mental age. A child, for example, passing all the tests in year IX would be credited with twelve months; if he passed only four of them, he would be credited with but eight months. In group XII there are eight tests which, because year XI is omitted, have the value of three months each. Similarly, each of the six tests in XIV has a value of four months, year XIII being omitted. The calculation of a child's mental age is therefore a very simple matter.

The rule is: (1) credit the subject with all the tests below the point where the examination begins, and (2) add to this basal

credit two months for each test passed successfully up to and including year X, three months for each test passed in XII, and four months for each test passed in XIV.

Let us suppose, for example, that a child ten years and seven months of age passes all the tests in VII, four in VIII, four in IX, and three in X. The total credits earned would be as follows:

	<i>Years</i>	<i>Months</i>
Credits presupposed (years 1 to 6).....	6	0
Credits earned in VII (6×2).....		12
Credits earned in VIII (4×2).....		8
Credits earned in IX (4×2).....		8
Credits earned in X (3×2).....		6
Total credits.....	8 years	10 months or 106 months

The mental age of the child is, therefore, eight years and ten months. He appears to be retarded somewhat less than two years. But having discovered his mental age we are not in a position to compare him readily with other children until we have reduced our results to some standard form of expression. The standard which psychologists have adopted for the expression of mental efficiency or deficiency is the *intelligence quotient*, usually written in the abbreviated form: *I.Q.* The intelligence quotient is found by dividing the mental age as revealed in the tests by the chronological age of the child. Thus, if the child tested above was aged ten years and seven months, by performing the process

$$\frac{8 \text{ yrs. } 10 \text{ mos.}}{10 \text{ yrs. } 7 \text{ mos.}}$$

we shall derive the *I.Q.* In this case, the *I.Q.* of the child would be 106 divided by 127, or .76. 100 *I.Q.* would mean exactly average intelligence, although in actual practice examiners usually consider all children whose *I.Q.* falls between .95 and 105 as of average intelligence. Most children below .70 or .75 are classed as feeble-minded, while those much in excess of 105 may be regarded as above the average in intelligence.

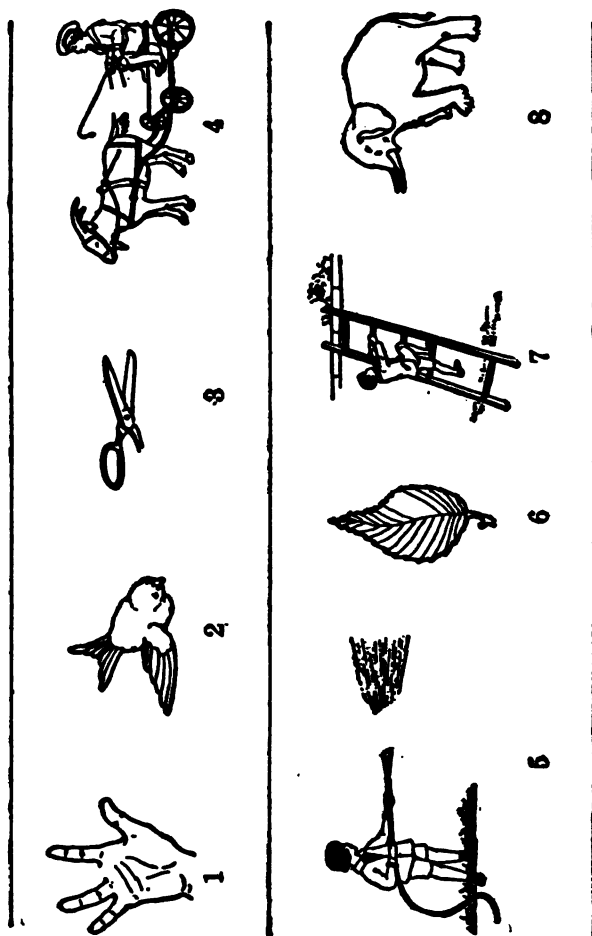


FIG. 9

EXERCISE 6. MARK IN EACH PICTURE WHAT IS LEFT OUT

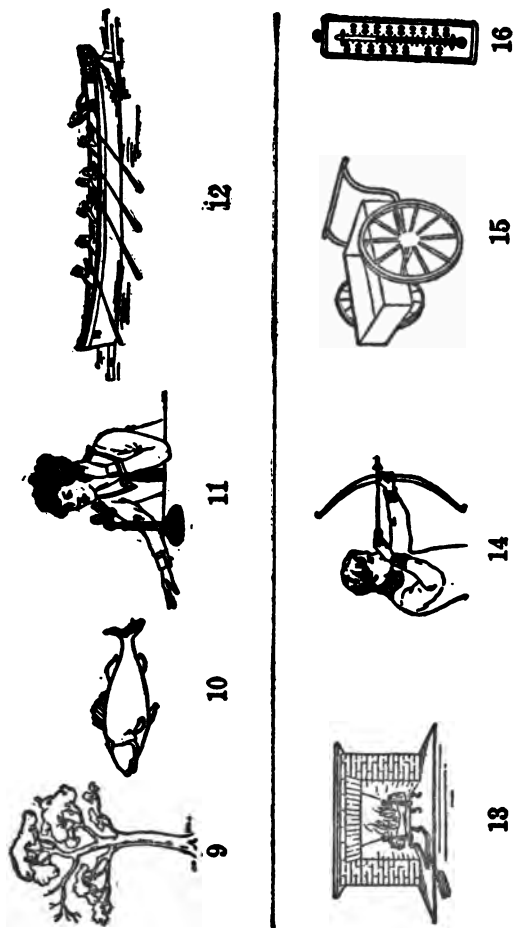


FIG. 9

Score
 EXERCISE 6. MARK IN EACH PICTURE WHAT IS LEFT OUT
 Reproduced, in part, from the *Haggerty Intelligence Tests*. By permission of The World Book Company.

Group intelligence tests. Before leaving the subject of mental testing, mention should be made of a still more recent development than the Binet tests in this field. The use of the Binet and other related tests is obviously limited in scope, inasmuch as but a single individual can be tested by one examiner at a time. The war brought psychologists face to face with the necessity of classifying large numbers of men on a mental basis in the briefest possible time. To meet this need, the examiners devised a variety of "group tests," so called, by which the number of individuals tested simultaneously was limited solely by the range of the examiner's voice. More recently still, scores of adaptations of these army tests have been made by as many investigators for practical use in the schoolroom. For the most part thus far the range of group tests has not included children below the upper grades, although there are now available several which are capable of being used in low grades.

The group tests are designed, like the Binet tests, to diagnose general intelligence rather than specific abilities. Fig. 9 is from the *Haggerty Intelligence Tests*, and is typical of group tests in general. A manual of instructions and procedure which accompanies all scales of this sort operates to rule out almost totally the personal equation of the examiner, making the use of such intelligence tests purely a mechanical process on the part of the teacher, no special training in giving them being necessary.

Educational or achievement tests. There is still another variety of test now commonly in use in progressive school systems. These are called *educational*, or *achievement* tests, as distinguished from *intelligence* tests. As their name implies, they are designed to measure the amount of knowledge or skill which a child may possess in any given curricular subject. Like the intelligence tests, they are carefully standardized by calculating as the standard of what a child in the sixth grade in arithmetic, for example, should be able to achieve, what extensive investigation has shown to be the average of the abilities of great numbers of children in the sixth grade in arithmetic. Their use, ob-

viously, places in the teacher's hands a means of determining whether her children are up to the standard in ability in arithmetic, etc., and if not, wherein their deficiencies consist. They are a sort of educational yard-stick which has been now sufficiently developed to include the measurement of abilities in nearly all the school subjects. Fig. 10 represents a section of the *Ayres Handwriting Scale*. The complete scale includes three types of handwriting, having each a value of 20, 30, 40, etc., up to 90. Only the lower (20) and upper (90) limits are shown in Fig. 10.

TOPICS FOR SPECIAL STUDY AND REPORT

1. Do you know of any children or grown-ups whose mentality appears to be somewhat low? Have any steps been taken to ascertain definitely whether they are aments, or merely retarded because of environmental causes?
2. Report to class upon chapter 1 and chapter 3 of Terman's *The Measurement of Intelligence*.
3. Confer with some teacher in the elementary schools, and question her as to the number of retarded pupils there are in her room. If possible, have her point out to you at least one child who is retarded. Obtain as much information as possible as to the probable cause of his retardation. Report the results of your study to class.
4. If possible, visit an ungraded room or a special school and observe the behavior of the children, reporting your impressions in class.

SELECTED REFERENCES

1. Holmes, A. *Backward Children*, chaps. 1, 2 and 3.
2. Terman, L. M. *The Intelligence of School Children*.
3. Terman, L. M. *The Measurement of Intelligence*, chaps. 1 and 2.
4. Whipple, G. M. *Manual of Mental and Physical Tests*, vol. 2.

MATERIALS FOR MENTAL TESTING

Houghton Mifflin Company, Boston, Massachusetts, will supply all the printed material used in the Stanford Revision of the Binet tests.

Record booklets for recording results of the Binet testing are supplied in packages of 25, and may be ordered of Houghton Mifflin Company. The volume by Dr. Terman, *The Measurement of Intelligence*, is indispensable to any one who wishes to learn to apply the intelligence tests. It gives complete and detailed instructions as to the procedure in administering every one of the ninety tests.

C. H. Stoelting & Company, 3037 Carroll Avenue, Chicago, Illinois, will supply the five weights for tests IX-2 and V-1, and also the Healy-Fernald Construction Puzzle used in test X.

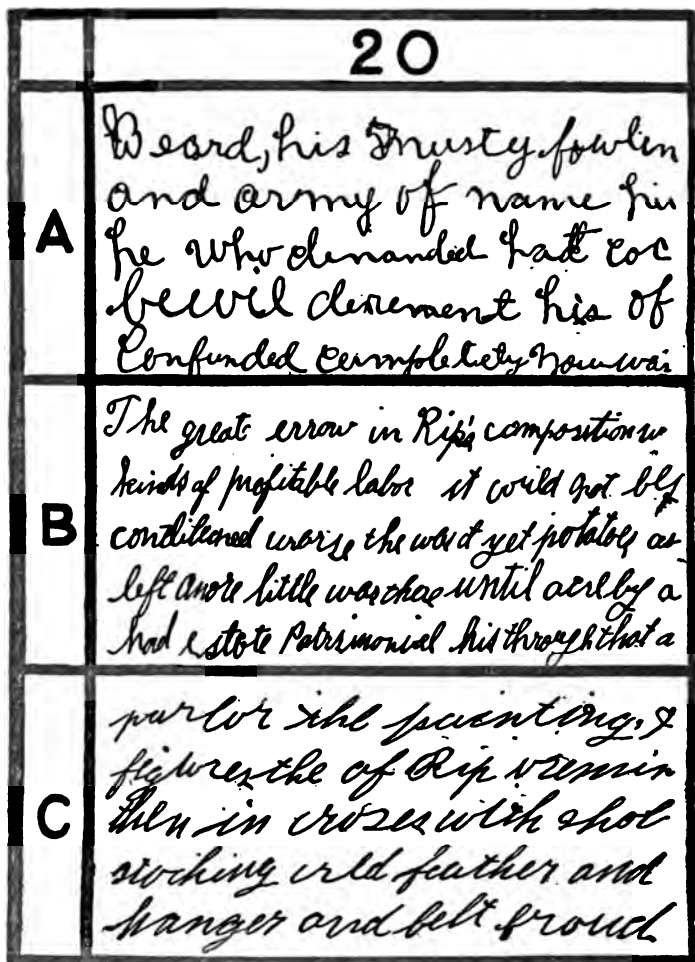


FIG. 10. A PORTION OF THE "GETTYSBURG EDITION" OF THE AYRES HANDWRITING SCALE

Reproduced in part with the special permission of Dr. Ayres and of the Russell Sage Foundation

We had not been home long w
was heard from the distance A
good before way gave soon ge
Daughters their with romped
the with gossiped cottage and

We had not been home
of music was heard f
of country cheer good be
quests the of bashful
not heard been music

Your mere puny stri
at the flourish of t
passed by with in
claims hanker
their at more seer

FIG. 10. A PORTION OF THE "GETTYSBURG EDITION" OF
THE AYRES HANDWRITING SCALE

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Russell Sage Foundation

LESSON 42

THE GIFTED CHILD

What to look for in the observation period:

1. Whether any children in the same grade appear to be brighter than others. Question the teacher concerning any such children observed. Note any peculiar physical or mental characteristics which such children manifest.
2. If the room in which you observe chances to include children of several nationalities, attempt to discover any racial differences in brightness among them. Do any of them belong to the lower social classes?
3. If possible, visit a special class for bright pupils and compare the work done, and the attitude and response of the pupils, with those in the regular grades where chronological age is the chief basis of grading.
4. Whether brightness in arithmetic goes with brightness in grammar; or brightness in composition with brightness in drawing, etc. Note any case in which unusual talent in any one subject is manifested.

Earmarks of the bright pupil. In our last lesson we were concerned especially with those children who rank on the lower end of the normality-abnormality scale and who are, hence, properly termed *sub-normal* or *dull*. In this lesson we are to turn our attention to the upper end of the scale and study those children who are mentally superior, and who are termed *super-normal*, or *bright*, or *accelerated*. In times past we have concerned ourselves more with the former than with the latter type of child, partly because the needs of the inferior child were obviously so much greater if he was to be turned out at the end of the school age anything like a fair product of the educational system, and partly because we knew so little concerning the intellectual thirst of the superior child. Then, too, the bright children in the schoolroom always conduct themselves tolerably

creditably; consequently they may be left largely to themselves by teachers who are hard put to it to keep the dullards in line with the average.

The gifted child is to be found in the school population of any system in approximately the same numbers as the dull one. In your observing from time to time you have noted again and again the brighter faces, the more alert and eager expressions, the better control of movements, the greater readiness and intelligence of responses, the nicer reasoning, the more vivid imagination, the deeper intellectual curiosity, the better memories and clearer understandings which ordinarily differentiate bright children from dull. You have observed how prone the teacher was to call twenty times during the period upon bright Johnnie or bright Sue, whose hands were so eagerly upraised and whose responses proved so satisfactory, while perhaps she all but disregarded dull Johnnie and dull Sue, who sat unresponsive throughout the entire lesson. If you were anything of an introspectionist, you no doubt appreciated keenly the mental process of the teacher who during all this time was compelled to make a lesson "go" to the satisfaction of visitors, handicapped constantly by the poor efforts of those children who were less capable mentally than the average and the super-average.

However, it is not always true that the brighter children actually appear to be the brighter in the schoolroom, and herein lies the tragedy of much of our school grading. Too often a child of unusual intellect, tiring of being held back at the pace of the mediocre when he longs to proceed twice as rapidly, loses that absorbing interest which formerly possessed him and becomes, to all appearances, a dull and unpromising scholar. Such was the case of a boy in the Berkeley, California, school system who had passed up through the lower grades with his fellows until he reached the age of twelve years. One day the teacher directed her children to note down on paper all the words in a rather difficult reading selection which they did not know. At

the end of the assigned task, this twelve-year-old, whom we may call Harry, presented a perfectly blank piece of paper to his teacher. Forthwith she demanded an explanation of his failure to perform the task required. Harry insisted that he knew all the words in the selection. The teacher, long out of sorts with the boy, upbraided him for untruthfulness and laziness and was much incensed at his behavior. Sometime afterward Harry was examined with the Binet tests, and, though twelve years old chronologically, he proved to have the mental age of a child of sixteen years and two months! In other words, he was accelerated more than four years, and instead of being in the fifth grade should have been in the first year of high school. No wonder that he had been often listless and lackadaisical in his schoolroom work; no wonder that he lost all interest in studying and was winning by his negligence and idleness the disapproval and censure of his teacher. You have seen a dog, brimful of energy and life, tugging at his leash in order to win his freedom and leap off madly and ecstatically to release his pent-up energies. The trouble with Harry was that he had been too long held in an intellectual leash. Consumed by eagerness to run at a rapid intellectual pace, he was yet restrained by the system, and hence gradually not only ceased to tug at his halter but ended by yielding absolutely to its constraint.

There are a great many school children like Harry whose whole future attitude toward and success in life are jeopardized because their intellectual talents are either never discovered or else are never given the favorable environment for development. Society can ill afford to risk losing the contributions which men and women of talent might make to it if they were given early and ample opportunity to do their best possible work in the schoolroom. Much of the progress of civilization would never have been made — or at least the process would have been much slower — had it not been for those individuals who excelled the mass of their fellows in intellectual capacity, and who were for that

reason enabled to conceive and to execute above and beyond the aspirations and the attainments of others. What a short-sighted policy it is, then, which bids us nurture the sub-normal and the backward at the expense of the brighter children! The crop of geniuses in any age is raised not from its dullest but from its brightest children. The pity of it all is that it has taken humankind so long to appreciate the relationship in its proper perspective.

Ability more often general than specific. Theoretically, superiority of intellectual caliber may be either general or specific. In the former case, we should expect to find the accelerated children to be brighter in practically every subject of school study, as well as keener at their play and more wholesome and aggressive in all their social intercourse; while in the latter, we should expect a child to be unusually capable in some specific study or situation, such for example as mathematics, or drawing, or music, or mechanical construction, while at the same time perhaps not ranking above the average in other fields of intellect. As a matter of fact, however, it appears that the ability which marks a child as unusually bright is a general rather than a specific ability. Occasionally, to be sure, you will find in the schoolroom a child who manifests exceptional ability in some one or two lines — notably drawing and music — but who is not above average or low-average in other respects. Psychology cannot yet inform us of the true significance of such cases. One would seem justified, however, in asserting that such specific abilities are the result of specific inheritance from some specially gifted ancestor from whom the child derives a small but striking percentage of his characteristics. Not infrequently, you will find that children who are positively dull in most respects show marked ability in one line, and even low-grade morons can often sing or draw admirably. Very obviously such ability must be specifically inherited.

Brightness and heredity. In the preceding lesson we found that there were two general causes of feeble-minded-

ness: heredity and accident, the first being the more usual. Brightness, however, is never the resultant of accident. The secret of brightness is locked up in the germ plasm of the ancestry, and there alone. You have observed often enough that bright children are usually the offspring of superior parents. No amount of training and no favorable manipulation of environment can create ability, as we have already seen. At best these agencies can only foster and cherish the innate powers of the individual, and make more inevitable and direct their development. This is not to be interpreted as meaning that only highly educated parents who move in the best circles may produce children of exceptional ability. It is, of course, true that the children of such parentage will be more likely in the long run to excel the offspring of parents low in the social scale, for the very fact that people are well educated and are associated with successful and prosperous neighbors points almost unmistakably to a superiority of natural endowment. It is likewise true, however, that marked mental ability and superior intellectual capacity reside in no special class nor are exclusively the product of any specific environment. Many a man and many a woman of surpassing powers of intellect have sprung from humble surroundings. Accident of birth and environment are no obstacles to the presence of true genius. The pity of it is only that all too often the environment is too harsh, too unsympathetic, too ignorant, with the unfortunate result that the natural talents never get the chance to find intelligent expression. It should be borne in mind, however, that the ratio of bright children in the schools who come from homes of the lower occupational status to those who come from homes of a higher social class is by no means an even one. F. A. Woods¹ leads us to the conclusion that the upper one per cent of the population of a country produces as many men of genius as all the other ninety-nine per cent put together.

¹ "Heredity and the Hall of Fame"; in *Popular Science Monthly*, May, 1913.

Dr. Terman reports (see Reference 1) classifying 148 first-grade children into five occupational groups: (1) professional; (2) semi-professional; (3) skilled; (4) semi-skilled; and (5) unskilled, according to the status of their fathers, and applying the intelligence tests to them all: "The median I.Q. of classes 4 and 5 taken together was 82.5; for classes 1 and 2 taken together, 112.5. Only one child in class 5 tested above 115, and only one in classes 1 and 2 below 85. Two-thirds of those in classes 1 and 2 were above 100, and seven eighths of those in classes 4 and 5 below 100." From these results it is apparent that only a single child of the higher classes tested as low as the median of all the children of the lower classes. The level of intelligence, as we should expect, rises with the economic status of the parents. Exceptions to this law are extremely rare.

Intellectual precocity not pathological. It has been long a common belief among parents and, to some extent schoolmen and educators, that there was grave danger in pushing a naturally bright child too fast up the intellectual ladder, as though in sooth he were likely to get dizzy and fall back. Wherever this matter has been brought under competent observation, however, the supposition has not met with confirmation. It is true that faulty methods of pedagogy applied to precocious children of neurotic and unstable temperaments or of poor physical health have often resulted conspicuously in ill effects upon the child so treated. But where normally stable children have been permitted to set their own pace educationally no harm has resulted. Rather all the qualities which make for happiness and success in life, such as power of concentration, social adaptability, leadership, emotional self-control, will power, dependability, etc., are ordinarily markedly intensified. Exceptions to this general statement would probably not be more numerous than one would have to make in generalizing concerning the mental and social and moral growth of the *average* class of children in the schoolroom.

Special classes for bright children. The development of

intelligence and educational testing has placed in the hands of school officials a means of discovering with tolerable accuracy all children of superior ability, as well as a method of determining approximately what that ability is. The next step, logically, is to provide extraordinary facilities for the promotion and advancement of such gifted pupils through the school system. This has already been done in several cities, and the reports of teachers and administrators are beginning to appear in the educational literature. It is not our province in this volume to enter into any survey of the practical results obtaining from this special class work. We are interested merely in the psychology behind the movement. Professor Whipple is credited with the assertion that ten out of one hundred children in the schools are able to complete satisfactorily two years' work in a single school year. The older method was to permit those children who seemed intellectually fitted thus to leave their fellows behind to "skip a grade," as the saying goes. Theoretically, this scheme resulted literally in getting the child ahead in accordance with his abilities. Actually, however, it inevitably left "gaps" in his ordered knowledge which were either never adequately filled, or which he was compelled at some later time to fill in at the cost of no little time and effort on his own part as well as patience on the part of the teacher.

The only really satisfactory and sequential method of rapid advancement through school lies in the special class, tempered to the capacities of the scholars. Ideally, the aims of such classes for brighter children do not include merely saving time in the intellectual evolution of talented boys and girls; time-saving is but a side issue. The chief purpose of the specially organized class is to provide the learner with a richer course of study than he would otherwise enjoy. Along with this richness of content go the enthusiasm and eagerness which are naturally felt by children who find that there is no limit to their intellectual incursions, and that their individual tastes and preferences may, to an extent hitherto undreamed-of, be satisfied.

Tentative conclusions concerning superior children. With the assistance of several of his Stanford University students, Dr. Terman has been able to secure Binet tests of some eighty California children, each of whom earned in the tests an I.Q. above 135, while most of them tested over 140. Fifty-nine of this group were subjected to somewhat careful study through interviews of parents and teachers, with the idea of arriving at certain definite conclusions concerning their intellectual ability, as shown by their school work, their mental and moral traits, the rate at which they had advanced through the schools, their interest and leadership in play, their health, heredity, etc. From the data thus amassed the investigator draws the following tentative conclusions which he believes amply justified by the inquiry:

1. That intellectually superior children are apparently not below the average in general health;
2. That in the vast majority of cases their ability is general rather than special and one-sided;
3. That the superiority is especially marked in moral and personal traits;
4. That "queerness," play deficiency, and marked lack of social adaptability are the exception rather than the rule.
5. That while superior children are likely to be accelerated on the basis of chronological age, they are usually two or three grades retarded on the basis of mental age;
6. That their school work is such as to warrant promotion in most cases to a grade closely corresponding to the mental age;
7. That superiority tends to show early in life, is little influenced by formal instruction, and is permanent;
8. That superior children usually come from superior families.

TOPICS FOR SPECIAL STUDY AND REPORT

1. Do you know of any children whose mentality appears to be conspicuously above the average? If possible, discover such a child in your neighborhood and experiment upon it with the Binet tests which fit its chronological age. Report your results in class.
2. Confer with some teacher in the elementary schools where you observe, and question her as to the gifted children, if there are any, in her room. If possible, have her point out to you one or more such

children. Discover in so far as you are able wherein the superiority of any given child lies. Report in class.

3. Familiarize yourself with the viewpoint and investigations to be found in chapter 11 of Terman's *Intelligence of School Children*.
4. Look up the files of the *Journal of Educational Research*, and of other recent periodicals devoted to psychological investigation and report to class upon some survey of gifted children.
5. Familiarize yourself with some of the more common *group* tests now in use for determining the general intelligence of individuals. Cf. especially the Otis and the Haggerty Tests. Confer with your instructor as to sources.

SELECTED REFERENCES

1. Terman, L. M. *The Intelligence of School Children*, chaps. 10 and 11.
2. Woodrow, H. *Brightness and Dullness in Children*, chap. 13.

LESSON 43

INDIVIDUAL DIFFERENCES

What to look for in the observation period:

1. Extreme differences in general intelligence among the pupils.
What are some of the factors which indicate the brightness or dullness of a child?
2. Evidences of striking physical differences between pupils of the same age or attainments, such for example as differences in size, physical type, condition of health and nutrition, acuity of the sense organs, etc.

Two extremes. Shortly before his fifth birthday, Francis Galton wrote the following letter to his sister, Adèle:

My dear Adèle:

I am four years old and can read any English book. I can say all the Latin Substantives and Adjectives and active verbs besides 52 lines of Latin poetry. I can cast up any sum in addition and can multiply by 2, 3, 4, 5, 6, 7, 8, 9, 10, 11.

I can also say the pence table. I read French a little, and I know the clock.

Francis Galton,
February 15, 1827. [*February misspelled.*]

And when he was ten years old, he wrote thus to his father:

December 30, 1832

My dearest Papa:

It is now my pleasure to disclose the most ardent wishes of my heart, which are to extract out of my boundless wealth in compound, money sufficient to make this addition to my unequalled library:

The Hebrew Commonwealth by John.....	9
A Pastor Advice.....	2
Horne's commentaries on the Psalms.....	4
Paley's Evidence on Christianity.....	2
Jones Biblical Cyclopedia..	10
	<hr/> 27

Dr. Woodrow, citing the above letters of Galton, compares the intellect of that remarkable man while he was yet a child with that of a girl named Abbie who was admitted to the Vineland Training School in 1900 and whose subsequent record was published ten years later in the bulletin of the School.

At the time of admission Abbie was small for her age, left-handed, and awkward. She always put the *same foot* forward when going up or down stairs; she knew her letters but could not read; she could count to ten; she knew some color and form, and she sang a number of hymns that she had learned at home. Her sight and hearing were normal, and she was fond of play. Among Abbie's more unfavorable characteristics were a bad memory and a poor power of imitation. She was gluttonous, untidy, untruthful, sly, and profane. Three months after her admission she could thread a needle and sew on buttons, could dust and rub floor a little, had learned to read *A man ran*, and *I see a man* (sometimes), counted to twenty, and, with help, could do such number work as this:

$$\begin{array}{r} 1 \quad 2 \quad 3 \\ 1 \quad 1 \quad 1 \\ \hline \end{array}$$

To-day, so the report runs:

She is small for her age. She can braid corn-husks a little; can make a bed; can iron an apron; cannot count the cost of three one-cent stamps and three two-cent stamps, with the stamps before her; cannot repeat five figures or a sentence of fifteen words; defines only in terms of use; can read a few sentences, spell a few words, and write about twenty-five words from memory; knows the days of the week, but not the months of the year; and does not know how many fingers she has on both hands.

Francis Galton was a highly talented and gifted man; Abbie was a feeble-minded person. The mentality of both was conditioned on their native endowments, not upon differences in training. These cases mark the two extremes of individual differences from the standpoint of general intelligence.

What is the significance of individual differences? The above represents, as Dr. Woodrow suggests, the two poles

of human intelligence. In previous lessons we have already become familiar with the fact that all individuals find a place somewhere on the genius-idiocy scale. This, as we have seen, does not imply that everybody is either an idiot or a genius, but rather that human beings tend to cluster more or less about a point on the scale which we may call "average" with many falling below and many above that point. And yet it would probably be quite impossible to find any two individuals in the "average" class who were alike in all respects, if indeed any could be discovered who were identical in *any* respect. In this lesson we are to endeavor to answer this question: in what ways do children of ordinary "average" ability differ from one another? You will readily understand that, if it can be demonstrated that individual differences exist between children, it should prove a profitable field for psychology to attempt to devise means of discovering such differences, and for education to set itself the task of making adjustment to individual needs and inclinations thus demonstrated to exist. Suppose, for example, that a father desires his son to follow in his own career and enter business with himself. Suppose, however, that psychology can demonstrate that the boy is far better endowed for a professional career than he is for business. Obviously, if such were the case, it would be of distinct advantage to society to allow the boy to follow his natural bent. Or again, suppose two young men of apparently similar abilities enter the profession of law. One of them forthwith "makes good" and gains an enviable reputation; the other drifts along for years without ever gaining any particular prominence, although possessed of just as much natural ability as his successful rival and having as good opportunity as he to rise. Wherein lies the difference? Obviously, in the capital of original nature: in the one it is invested wisely, in the other unwisely. Psychology may not for many years yet be in the position of being competent to predict absolutely the vocation for which an individual is best fitted naturally, but you can easily comprehend the

significance which the investigation into the real nature of individual differences is bound to have in reducing the number of misfits in professions, trades, and industries. When the psychologist can say to this youth: "You are best endowed for literary pursuits," and to this one: "You should become a mechanic," etc., much progress will have been made toward bringing not only success but serenity of mind to the individuals which go to make up society. And such prediction of vocational fitness will only become possible when more is known concerning the psychology of individual differences.

It must not, however, be inferred from all this that the Binet scale alone is a sufficient test of vocational endowment. At best, as we have seen, the Binet problems are intended to demonstrate the *general intelligence* of a child, without any special reference to his particular bents in drawing, music, art, mathematics, salesmanship, etc. It is true, however, that the Binet tests in the hands of an experienced investigator are "capable of bounding roughly the vocational territory in which an individual's intelligence will probably permit success, nothing else preventing."

Within the past few years there have been developed a large number of supplementary tests designed more particularly to discover and diagnose the vocational aptitudes of individuals. Let it be supposed, for example, that a certain type of work requires quickness of perception and powers of sustained attention on the part of those who are to succeed best in it. Proof-readers, loom-workers and weavers, mail clerks, *et al.*, should presumably be possessed of these qualities far more than ditch-diggers, stokers and dish-washers. Fig. 11 represents a single one of a great number of tests available for testing these mental traits. Both the correctness of the reading and the time required for completion of it are taken into account in determining a person's final score.

If the above test were to be given to one hundred individuals selected at random, the results would show wide di-

tribesvarioushemoccasinsworetheydoweasleatherofshoeswearing
ofinsteadbeadsandclawsbearsteethelksofmadenecklaceswear
tolikedandornamentsoffondwereindiansthefineryotherandbeads
feathersbirdquillsporcupinewithembroideredwerethesesometimes
skinofrobeshadtheyoccasionsfestiveforbuckskinofleggingsworealso
menthebehindandfrontindownhangingbeadswithdecoratedends
thewaistthearoundbeltabyplaceinheldwasthislongfeetofnumber
aandwidemoreorfootaskinofstripaworementheanimalswildofskins
theoflargelymadewasindianstheofdresshecamenmenwhitethebefore

FIG. 11. SHOWING THE FIRST FEW LINES OF A PERCEPTION TEST USED IN CONNECTION WITH WHIPPLE'S "MANUAL OF MENTAL AND PHYSICAL TESTS"

The instructions are: Begin at the right-hand end of the last line and read aloud as fast as possible without making mistakes.
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vergences. A few persons would complete the story satisfactorily in, say, three minutes; a few others would require, say, ten or more minutes, while the greater number would take perhaps five or six minutes. Were the same test to be given to a number of experienced proof-readers there would probably be much less divergence in the time required for the task. It goes without saying that a printer desirous of engaging the services of a young man whom he wishes to train for proof-reading would do well to choose not one of those individuals who require ten minutes for the reading of the "Indian" selection, but rather, other things being equal, one of those who complete the reading in three minutes.

Fig. 12 represents a test of a slightly different nature. It is a type of "substitution test," so called from the task required, which is to substitute for the numbers in the two columns the symbols at the head of the sheet which are appropriate. A record of the time and accuracy of performance is kept and the individual's score computed from both factors. Again, of one hundred random individuals selected to perform this test, a few would complete it in five minutes, a few would require fifteen, while the greater number would, perhaps, finish in approximately seven minutes. Can you tell what trades or professions would be best suited for those individuals who could satisfactorily complete the test in the shortest time? ¹

Some evidences of individual differences in children. Physically, children are so different that we do not need to dilate upon that phase of individual differences. In size, body-weight, proportion of parts, stamina and health, nutritional condition, etc., a thousand children would present very wide divergencies. We are interested in the mental, however, not with the physical side of life — except, of course, in so far as the mental is understood to be always more or less conditioned upon the physical. The same thousand children, if they could be classified into groups

¹ Description of this and other tests of a similar character in Whipple's *Manual*, Reference 3.

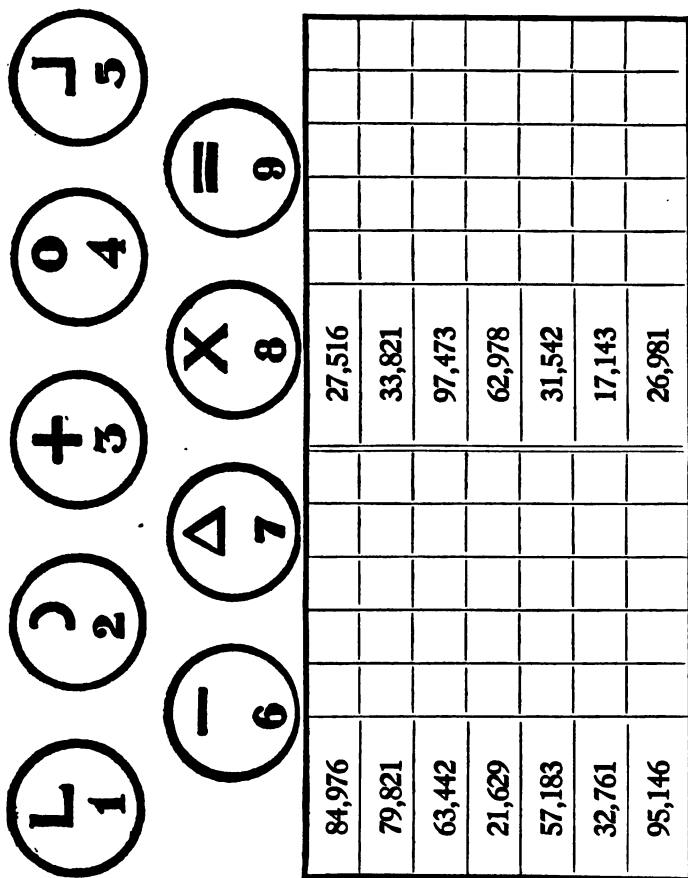



FIG. 12. SHOWING A PORTION OF A SUBSTITUTION TEST FROM THE MATERIAL SUPPLIED IN CONNECTION WITH WHIPPLE'S "MANUAL OF MENTAL AND PHYSICAL TESTS"

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Professor G. M. Whipple



84,976						27,516				
79,821						33,821				
63,442						97,473				
21,629						62,978				
57,183						31,542				
32,761						17,143				
95,146						26,981				

according to mental, moral, social, and intellectual characteristics, would present most glaring differences in every conceivable respect. Indeed, the classification would be utterly impossible, since there would be discovered to be x amount of a quality in one individual, y amount of b quality, and z amount of c quality in the same individual; and more than likely no other individual in the entire group would present exact, if indeed approximate, amounts of either quality a , b , or c . In such marvelous fashion does the germ plasm operate to produce individuals. It is as though back of the germ cells, nature was delighting in making her potential creatures as varied as possible, not unlike a complex picture-puzzle the parts of which can never be fitted exactly together!

In your observation of and intercourse with boys and girls you have no doubt noticed to a degree the presence of these individual peculiarities which differentiated one child from another. One child is affectionate, another is unemonstrative; one is shy, another is bold; one is honest, another is dishonest; one is a natural leader, another is a natural follower; one possesses much originality and ingenuity, another is slavish and imitative; one has the virtue of thrift, another is wasteful; one is characterized by conceit, another by as deep humility; one is timid, another is fearless; one is bright, lively, spontaneous, another is dull, sluggish, inert; one is refined, another is coarse and vulgar; one is vain, another is modest; one is particular, another is indifferent and careless; one is boisterous, another is retiring; one is respectful and reverent, another is disrespectful and irreverent; one is curious and inquisitive, another is passive and indifferent; one is emotional, another is colorless; one is rough or even cruel, another is sympathetic and tactful. And so the list of variations might be extended to comprise all the mental, social, and moral qualities of which children are possessed. And in addition to the extremes here enumerated there exist, of course, all degrees between, both on the negative and on the positive sides. You can now begin to un-

derstand something of the significance of individual differences.

Individual differences in school work. The following verse from Stevenson's *Child's Garden of Verses* was read to a class of ten-year-olds with the purpose of noting individual differences in the faithfulness with which they could write down the story in their own words immediately after hearing it:

In winter I get up at night
And dress by yellow candle-light.
In summer, quite the other way,
I have to go to bed by day.

I have to go to bed and see
The birds still hopping on the tree,
Or hear the grown-up people's feet
Still going past me in the street.

And does it not seem hard to you,
When all the sky is clear and blue,
And I should like so much to play,
To have to go to bed by day?

I have selected two versions written by two girls, V and R, as representing typical individual differences in memory, spelling, and linguistic abilities, etc.

V's version:

In winter I get up by night and dress with a yellow candle-light. In summer I have to go to bed by day. I see the birds on the tree-tops and grown-ups feet I here. I'd love to stay out and play.

R's version:

In winter I get up at night and dress by yeoll candl light. In sumer quit the our way I have to go to bed by day. And still her the birds still.

Had the task given to the children been one in arithmetic or in any other subject of study the results would have been similarly variable. You will not observe children in the

schoolroom long before you will discover for yourselves how different are their powers of attention, of observation, of perception; how widely they differ from one another in imagery types, imagination, memory and reasoning ability; in interpretative powers and in powers of comprehension; in concentration and perception. You will find also, as we have said before, that children in the same grade manifest all degrees of ability and inability in music, drawing, writing, composition, spelling, manual training, arithmetic, and in each of the other subjects included in the curriculum.

In how far individual differences in abilities are due to differences of training and environment and in how far they are the results of hereditary differences, need not concern us here. As we have pointed out so often in preceding lessons, however, inheritance is doubtless a far more powerful factor in the shaping of abilities of individuals than is the environment in which they are nurtured. This, obviously, does not mean that the factors of nurture are of no significance: we know better. It does mean, however, that whatever our educational aims, values, or processes, they must all ultimately proceed from the general truth that boys and girls are what they are individually, not because of the accident of environment and training, but rather from innate differences which lie hidden in the secret of the germ plasm.

TOPICS FOR SPECIAL STUDY AND REPORT

1. Study Thorndike's chapter on "Individual Differences."
2. Using your own initiative and originality, devise some simple test for demonstrating the phenomenon of individual differences, and try it upon two or more students or friends. Make a note of any peculiarities discovered and report the result of your test in class.
3. Study some one test in Whipple's *Manual* and be prepared to demonstrate it in class. If necessary, confer with your instructor for blanks, apparatus, etc.

THE LESSON APPLIED

1. Knowing what you do of the frequent lack of close parallelism between chronological and psychological age, what criticism have you to make concerning the prevalent method of grading children?

2. Would it be wise or possible to group children in their school work strictly in accordance with the relative sameness of their abilities, or is it more wise to limit the grouping to three classes: the dull, the bright, and the average?
3. The statement has been made that there is no such thing as an average child. If such is the case, what is its pedagogical significance?

SELECTED REFERENCES

1. Terman, L. M. *The Measurement of Intelligence*, pp. 16-21.
2. Thorndike, E. L. *Educational Psychology*, vol. 3.
3. Whipple, G. M. *A Manual of Mental and Physical Tests (general)*.

LESSON 44

THE UNSTABLE CHILD

What to look for in the observation period:

1. Evidences of the presence of psychoses or neuroses in any of the children. Confer with the teacher, if possible, having her indicate to you any children who might be classed as mentally unstable.
2. Any cases of habit-spasms, or "tics" in the children.

The unstable *versus* the mentally deficient child. In the two lessons preceding we have concerned ourselves with children whose mentality tested above or below the average for their chronological ages. In this lesson we are to investigate mental or nervous instability in children. If you have observed many times in the schoolrooms of your city, your attention has without doubt been called occasionally to children who seemed hyper-sensitive, or abnormally suggestible, or highly nervous, or unduly emotional, or who manifested other forms of instability. It is not improbable that you are acquainted with certain adults who are similarly unstable and neurotic: men or women who are totally unable to look out upon life normally and calmly; whose self-control has never been established with any degree of dependability; whose eccentricities are over prominent; who are the perennial victims of exaggerated fears and forebodings and dreads; who are characteristically indecisive and changeable in viewpoint; upon whom neighbors and friends are likely to look as "queer," or "peculiar" people. Such adults are but the unstable children of yesterday grown up, and they are living, as it were, over a volcano which may erupt at any time, plunging them into serious mental disorder or nervous complications.

But such people are by no means mentally deficient, either as children or as grown-ups. Indeed, they are often

brilliant, testing well beyond their chronological age, or at least ranking with the average of all other children mentally. A defective heredity is often a tremendous factor in the behavior of the unstable child, and some of the world's most famous men have been distinctly neurotic. We can but conclude, therefore, that heredity in the case of the mentally unstable does not so much decrease the native capacities of the individual as it lessens the normal control which he has over his capacities and over himself. In general, we may say that the unstable person lacks that balance which characterizes the normal responsible person. He has none of the niceties of control and coördination of movements that his normal fellow possesses. He is impulsive, possesses numerous idiosyncrasies, and is often excessively irritable and depressed, becoming at times, however, quite the reverse.

Surely no more classic description of an unstable individual could be cited than that of Dr. Samuel Johnson which is given by Lord Macaulay. And the very fact that the person described was the great Lexicographer should leave no doubt in our minds that mental dullness does not necessarily go with mental idiosyncrasy:

He had become (before he left the university) an incurable hypochondriac. He said long after that he had been mad all his life, or at least not perfectly sane; and in truth eccentricities less than his have often been thought grounds sufficient for absolving felons, and for setting aside wills. His grimaces, his gestures, his mutterings, sometimes diverted and sometimes terrified people who did not know him. At a dinner table he would, in a fit of absence, stoop down and twitch off a lady's shoe. He would amaze a drawing-room by suddenly ejaculating a clause of the Lord's Prayer. He would conceive an unintelligible aversion to a particular alley, and perform a great circuit rather than see the hateful place. He would set his heart on touching every post in the streets through which he walked. If by any chance he missed a post, he would go back a hundred yards and repair the omission. Under the influence of his disease, his senses became morbidly torpid, and his imagination morbidly active. At one time he

would stand poring on the town clock without being able to tell the hour. At another he would distinctly hear his mother, who was many miles off, calling him by name. . . . With such infirmities of body and mind, the celebrated man was left at the age of two-and-twenty, to fight his way through the world.

Physical symptoms of instability. Some months ago the writer chanced to be in attendance at a psychological clinic; i.e., a testing of the mentality of children with the Binet or other tests. One of the children who had been sent in by her teacher was a girl of twelve years, whose muscular control was complained of as being almost entirely lacking. The Binet tests showed the child to be of average intelligence for her age. But when the physician made his examination it was revealed that she was anæmic and was in a general condition of poor health, aggravated no doubt quite as much by her nervous condition as the latter was aggravated by the former. Among other things, she was asked to extend her arms horizontally in front of her, keeping her hands open and fingers outstretched. The child was perfectly at ease, but her arms trembled like leaves in the wind. She appeared to have almost no control over the involuntary muscles of her body, with the result that they were constantly twitching. Of course none of us can altogether control these involuntary twitchings of our muscles. You can demonstrate this fact to your own satisfaction if you so desire by attempting to hold your outstretched hand perfectly still. In spite of your best effort, you will find if you attend closely that there are circumscribed and rhythmical tremors which are constantly passing through the hand. But the child referred to above possessed practically no control, and her hands and arms made very visible excursions in rapid succession to and fro and up and down.

This lack of control over the musculature is one of the common physical accompaniments of instability. Others may be inability to control the speech organs and even facial expression, nervous fingering of objects, clumsiness of gait and of general movements. Often the heart action is irregu-

lar, the breathing correspondingly jerky, and the patient suffers from indigestion and occasionally from anæmia. Such children are often delicate without having any specific disease. Disorders in sleep are particularly common among them. The night fears which we described in our lessons on the emotions run riot in the unstable. Many such children are rheumatic; some are pre-tubercular. Physical irritation, due to such abnormalities as eye-strain, impacted or carious teeth, nasal obstructions, etc., is likely to be the rule rather than the exception. Muscular movements, in addition to being uncontrollable, are sudden, rapid, and ill-coördinated. These symptoms are especially likely to be observable in those parts of the body which are most delicately and finely balanced; i.e., in the face, the hands, and the speech apparatus. The unstable child is very restless both in the schoolroom and at home. The end-organs are hyper-sensitive with the result that sharp noises or bright lights cause much discomfort. Such children are subject to sudden and intense pallor, alternating with flushing, and excessive perspiration may follow the slightest exertion or excitement.

Emotional characteristics. But marked as are the physical symptoms of the unstable child, they are by no means so certain indicators of instability as are the emotional and volitional characteristics. The most marked and universal of all the characteristics of an unstable child is an excessive emotionality. The slightest stimuli may provoke in him the most sudden and intense responses. He is apt to be "quarrelsome, noisy, destructive, mischievous, and rebellious." He is ordinarily remarkably timid, apprehensive, apt to magnify trivialities, and slow in his effort to meet them. Irritable in temper, unstable children are subject to outbreaks of passion upon slight pretext. They pass easily from levels of hilarious joy and delight to lower levels of depression and pessimism. In affection they are usually demonstrative beyond the ordinary, and are highly jealous. They court notice and praise and approval, but are often

easily humiliated and chagrined. They are very fastidious, and often display marked aversions to foods of certain varieties. The sexual emotions are often precociously developed in such temperaments as theirs. The gregarious instinct is strong, and unstable children suffer often with loneliness; hence, they seek always companionship and crowds. They melt in tears at the slightest provocation, but are apt to be laughing happily the next moment. The unstable child loves excitement, is notoriously imaginative, but is hopelessly inattentive. Observation is not infrequently poor, but comprehension is likely to be quick. Terman says of such children:

The nervous child is hesitating, timid, vacillating, unable to cope with the real. More and more he falls back upon day-dreams, books, imaginative enjoyments, etc. He plays little, adjusts badly to other personalities, is seldom a leader. Not infrequently he is made an outcast by his fellow pupils. Not being able to mingle on equal terms with other children or to depend on himself, he clings to adults and becomes oddish and precocious. . . . Absurd scruples, religiosity, over-conscientiousness may appear. The child weeps from stepping on ants, considers it sinful to eat meat, suffers torment over imaginary sins, etc.

Common forms of psycho-neuroses. (1) *Epilepsy*. One of the common results of psychic and nervous disturbance is epilepsy. This form of neurasthenia (or *psychasthenia*, since the terminology is by no means fixed among the authorities) is usually inherited, and is therefore not likely to be amenable to treatment. Children who are subject to epileptic attacks may be bright, but are more usually dull. Aside from the hereditary predisposition, the tendency may be aggravated by local irritations, such as eye-strain and decaying or impacted teeth, nasal obstructions, etc. Children who are afflicted with *pavor nocturnus* may become epileptic at the critical period just preceding adolescence. Early convulsions of childhood which are due to local irritation are frequently also followed by pronounced epilepsy at puberty. Under no circumstances should the child subject

to frequent attacks in school be permitted to attend classes with normal children, there being a possibility that a sort of "psychic contagion" may be set up. The patient, during the period of attack by epileptic fits, ordinarily loses his memory completely for the time being, and when he emerges from the spell is entirely at a loss to recall anything that has happened.

(2) *Hysteria*. Janet, the famous French psychologist, says of hysteria: "It is a form of mental depression, with a tendency to dissociation and the emancipation of systems of ideas and functions which by their synthesis constitute the personality." In other words, hysteria is a condition of the mental life wherein the unity of mental process is dissipated. Consciousness may become a very multiplex state in contrast with its usual unity. Some systems of ideagroups may be totally disconnected from the rest and perhaps be relegated to the unconscious, where they constitute a continual menace to the integration and relatedness of all the other ideas. In consequence, what is termed "multiple personality," in which the foreign group of associates and ideas alternate with the other conscious groups in controlling the behavior of the individual, may come about. The afflicted one may be a Dr. Jekyll one day or one minute, and a Mr. Hyde the next. Dr. Franz enumerates, among other symptoms of the hysterical subject, the following four: (1) emotional instability; (2) abnormal suggestibility; (3) an exaggerated ego, or morbid desire to win notoriety and sympathy; and (4) motor disturbances, such as convulsions, tremors, and paralyses. Real hysteria, as Dr. Terman points out, is not extremely common, "but the emotional instability and the hyper-suggestibility bordering upon hysteria are not uncommon. To fixate the child's attention too intently upon matters of health, to overstimulate the precocious, to permit day-dreaming to take the place of productive work, to destroy in any way the feeling of self-reliance and personal independence, all help in the formation of characters that may become hysterical."

(3) *Dementia præcox*. *Dementia præcox*, or the "insanity of adolescence," is a form of psychosis which involves usually sexual imagination, fantastic day-dreaming, brooding over disappointments, and a lack of relation between thought and action. This latter is perhaps the most characteristic symptom of this form of insanity. The individual afflicted is likely to be more brilliant than the reverse, but exceedingly unpractical. The following description of the malady by Dr. Meyer is perhaps the best one available:

There develops an insidious tendency to substitute for an efficient way of meeting difficulties a superficial, moralizing self-deception, and an uncanny drift into many varieties of shallow mysticism and metaphysical ponderings or into fantastic ideas that cannot possibly be put to the test of action. All this is at the expense of really fruitful activity, which tends to appear insignificant to the patient in comparison with what he regards as far loftier achievements. Thus there develops an ever-widening cleavage between thought-life and the life of actual application, such as would bring with it the corrections found in concrete experience. Then, under some strain which a normal person would be prepared for, a sufficiently weakened and sensitive individual will react with manifestations which constitute the disorders of the so-called "deterioration process," or *dementia præcox*. . . .

Dr. Meyer gives, among others, the following case, which may be taken as typical of the disorder:

She began school at seven years, was smart and applied herself well, but at the age of eleven she seemed to be failing, and was thought to be studying too hard. She grew thin, seemed nervous, and complained of headaches; at twelve she was in poor health. . . . She was disappointed at home (later), for some time dreamt of becoming a teacher, but soon sank into hypochondriacal ruminations, and finally, at twenty-one, after useless surgical operations, passed into a confused religious excitement, followed by stupor, in which she sits inactive and irresponsive, with the top-heavy and yet empty notion of being good, of saving the world, etc.

Other neuroses. Among the other neurotic disturbances which are more or less frequently observed in children should be mentioned *chorea*, or St. Vitus's Dance, a malady

associated usually with rheumatic affections of the joints. Dr. Terman describes its onset and development thus:

At first the child may be considered unusually nervous. It drops things, has difficulty in sitting still, is clumsy in eating, in buttoning the clothes, has an awkward, shuffling, unsteady gait, and stumbles. Sometimes the first symptoms are slight spasms of the facial muscles, twitching of the eye, grimaces and the like. Later the movements become intensified, irregular, jerking, and almost constant except during sleep. In severe cases speech is almost impossible, and the child may be practically unable to walk, or to handle fork or spoon in eating. . . .

Habit-spasms, too, or "tics," should also be included among the psychoses of childhood and adolescence. By habit-spasms are meant those automatic and involuntary muscular twitchings which are not infrequently met with in children. Ordinarily these twitchings are local, that is, they are less widespread over the body than is true of the choreiform twitchings. They involve "an isolated twitching or contraction of any muscle or muscle-group, as of the face, tongue, neck, or organs of respiration, such as elevating the lip to meet the nose, sniffing, lightning-like blinks or nods, writhing, shrugging the shoulders, elevating the chin and stretching the neck, protruding the tongue, showing the teeth, emitting queer guttural noises, etc." Very few children ever grow up to mature years without having at some time been the victims of habit-spasms of some form or other.

TOPICS FOR SPECIAL STUDY AND REPORT

1. Confer with the teacher of some fifth or sixth grade, and get as much information as possible from her as to any neurotic children whom she chances to have in her room. Report the results of your inquiry to class.

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LESSON 45

ADOLESCENCE

What to look for in the observation period:

1. The pupils in the seventh and eighth grades will, in most cases, have entered upon the period of adolescence. In your observation work in these grades, note especially any indications that you may chance upon to the effect that adolescence in its earlier stages is a period of heightened and exaggerated sense of self, of dreams and reflectings, of social organizings and social interests, of restlessness and moods, etc., etc.

Definition of the term: adolescence. Roughly speaking, the period known as *adolescence* may be said to extend from the twelfth to the twenty-fourth year of life. More accurately, it begins in temperate zones around the fourteenth year, in the case of boys, and one or two years earlier for girls. In warm climates its onset is somewhat earlier. The period of adolescence continues until maturity is reached, which is generally considered to be approximately twenty-five years for men, and perhaps twenty-three or twenty-four for women. It is bounded on the one hand by childhood and on the other by adulthood. It is a sort of interregnum between the frolic of childhood and the earnestness and labors of maturity. It is the period of "storm and stress" of human existence in which the entire outlook upon life undergoes a marked change; when the values of infancy and childhood are reexamined critically in the light of the dawning personality; when new ideals, new standards, new viewpoints are brought into existence for the future adult individual; when concern for the human and social and moral obligations and responsibilities and possibilities have their true birth.

You recall your study of the period in human history

known as the "Renaissance," or "new birth." If we may liken the evolution of the individual to that of the group, or of mankind in general, we may term adolescence the renaissance of the individual. For just as the peoples of the thirteenth and fourteenth centuries, joying in their unfolding strength and looking forth for the first time upon a mighty, hitherto undreamed-of world stretching away to the uttermost confines and teeming with the most enticing possibilities and opportunities for human endeavor, so the individual who stands at the threshold of adolescence, and in the midst of the period itself, is as it were, a "revived" individual, dweller in the midst of a new heaven and a new earth, possessed of seeming limitless might, feverish with energy and passion, consumed with herculean desire to plunge into untried life and extract from it all its sweet, quite unmindful of its bitter. Watch, if you will, some child who stands thus at the great threshold of the future. The world calls him in no uncertain language. Forces of which he has hitherto known nothing are stirring within his breast. Ideas and ideals previously undreamed of stream through his impassioned brain like the surges of ocean. Dormant strength is unfolding; restrictions and limitations are being cast off; mankind, nature, God, — all summon him to their service. Old things are passed away, and behold all things are become new again.

Physiological characteristics of adolescence. The term *adolescence* comes from the Latin *adolescens*, which means *youth*. Youth is therefore a synonym for adolescence, and what a magic word it is! Adolescence is, physiologically, the time wherein there is more rapid growth of all the body parts than at any previous time since the first year of life. Growth in height precedes growth in weight, height ordinarily reaching its fixity around eighteen, while weight may continue to be a variable quantity throughout the greater part of maturity. You are familiar with the sudden incidence of rapid growth in height of the boy, beginning around his thirteenth or fourteenth year. Hitherto he has been

but a boy in stature, but now suddenly he "shoots up" almost overnight. The mother and perhaps the father, too, confess with a degree of parental pride that is delightful that the boy is taller than either of his parents now! And so with the girl. Around her twelfth year she begins to "run up," and in a few months has reached the stature of the mature woman, without, however, her robustness and weight. The muscles during adolescence grow more than at any other time. At the very first of the period usually appears a strange awkwardness and lack of gracefulness which is due to the fact that at puberty there is an initial period of lack of motor control. It is probable that abnormal or excessive insistence on the part of school or home upon activities demanding delicacy and niceness of execution during this period may lay the foundations for subsequent instability and neuropathic ills, such as we referred to in the preceding lesson. The first year or two of adolescence is rather a time for the development of the all-round physical body than for emphasis upon such accessory skills as artistic writing, drawing, and upon too much confinement of school work. This, of course, does not imply that formal education should cease for a season at the twelfth or thirteenth years; it rather points to the wiser course of more emphasis upon fundamental than upon accessory muscle groups. You are perhaps in general familiar with the initial phase of puberty and adolescence as it is commonly observed, for example, in boys, "whom nobody loves except their mothers" during the time in which they are in this generally awkward and graceless period of their evolution. Or again, you are familiar with its manifestations in the voice of the boy which during the early part of adolescence is subject to "change" — a liability which causes him no end of embarrassment. The reason back of this undependability of the voice is to be found in the fact that at adolescence the vocal cords become elongated as the larynx enlarges, thus interfering somewhat with the previously formed voice-control habits.

Psychological characteristics. But, after all, it is in the realm of the mind and the intellect that the most profound "storm and stress" takes place with the coming of adolescence. It would be wholly impossible in a brief chapter such as this to indicate in any satisfactory way all or the greater part of the psychological changes which come with adolescence. We must therefore be content with enumerating and illustrating a few of the more striking modifications which appear at this time of life, and a few of the redirections which are given to former values and ideals.

1. *A heightened sense of self.* Perhaps the most bashful and self-conscious of all individuals is the individual in the adolescent age. . The very awkwardness characteristic of the earlier part of this period is in itself often a cause of the extreme self-consciousness of the adolescent. Another phase of this same heightened sense of self is to be found in the inordinate conceit which is not infrequently observable, although it is also true that youths are usually very sensitive to the remarks of others and at times may manifest a spirit of deep humility.

2. *An age of dreams.* As Dr. Burnham has said, "the adolescent mind is filled with hopes, dreams, tempestuous passions, and new ideas." It is an age of musing and reverie. The future beckons, but the guiding stars and buoys which are to point the way across the trackless deep of life are as yet but indistinctly made out. Consequently, most of the dreams and hopes are either unattainable or else are still so misty and uncertain as to be well-nigh incomprehensible even to the dreamer and hoper himself. An inordinate passion to solve great problems, and subdue mighty forces, and accomplish herculean tasks permeates the mind of youth. To win power, to merit praise and approval, to wear crowns of laurel won in righteous cause, to hold the destiny of many in the palm of one's hand — all these and scores of other ambitions stir insistently within the breast of youth.

3. *A social age.* We have seen that the younger child is

an individualist, becoming only a group member as he grows into the period of later childhood. With the coming of adolescence the social instincts enter their golden age. Egoism is likely to give place to altruism, although it may not. To quote from Dr. Hall:

... The youth alternates from extreme individuation to mere slavishness in following his mates; from quixotic generosity to selfishness; from the highest ideals of social self-sacrifice to absurd notions of his rights. . . . Before pubescence games and plays are largely competitive; after it, team work is the most marked characteristic, and with it the gang and the club appear. While the youth is even more egoistic than before, while he is excessively self-conscious and perhaps aggressive toward the opposite sex, he also lays aside his personal likes and dislikes to work with his team and his school, and adopts almost slavishly the fads and frills dictated by those whom he elects as his *socii*. He now develops pride in his family, class, city, and nation, and not only civic and national patriotism can now be most effectively taught, but also love for humanity. . . .

4. *An age of restlessness.* Another strong characteristic of the period is the adolescent's eternal seeking after new experiences, new sensations, new excitements, new stimuli. This is true quite as much on the physical as on the mental side of life. On the former, you have noted doubtless the interest which youths have in perfecting skills and clevernesses, and in originating situations which call for ever newer and ever more skillful skills. On the latter, you have noted the thirst which young people ordinarily manifest in travel, change of scene, unusual experiences, novel and hitherto unthought-of intellectual diversions. It is the age in which the "thriller," whether it be in theatricals, or in literature, or mere sense experience, is sought after and courted as a fitting form of experiencing something new and untried. The race-course, the dance-hall, the moving-picture theater, the airship, the automobile, and scores of other sources of excitement are in good repute among most adolescents.

5. *An age of moods.* One never knows quite how to take

an adolescent in the early teens, because he may manifest such diametrically opposite moods all in the same day. He may be for a time in the depths of misery and blackest despair, and in the next hour rise to heights of great elation and satisfaction. Even in youths of sound common sense and the very reverse of the unstable this changeableness of mood is often to be observed. At one moment the youth is a good "mixer," socially-minded and happy in the bosom of his group; at the next he may seek solitude from the revelry and good cheer of his mates to plunge himself into the most melancholic introspecting and ruminating. In persons of unstable mentality, as we have pointed out above, the dangers of this period are enormous. Too much looking-inward may be the causation of the subsequent withdrawing of the unstable from the group and the centering of thought upon himself.

6. *An age of omnivorous reading.* For most youths the earlier years of the adolescent period represent an age in which the possibilities of literature and romance are delved into in order to satisfy that all but insatiable thirst after information, new experience, and new situations. With boys, as Dr. Hall points out, "stories of adventure, travel, and biography culminate in the eighth and ninth grades, and fiction at eleven for both sexes." Around the fifteenth year there comes a marked decline in the reading interest, which may continue for several years, or until an appreciation of literature for literature's sake is instilled by growing familiarity with the better class of writers past and present. This same reading interest occasionally finds outlet in young would-be writers actually attempting to "write" stories of their own. Ordinarily, however, the fruits of adolescents' pens are apt to be largely plagiaristic of the works of a favorite writer.

7. *An age of religious searching.* It is apparent from the investigations available that the great age for conversions falls somewhere in the neighborhood of the sixteenth and seventeenth years, and that unless the interest of youths

has been directed toward religious experience by this time the probabilities are strongly against their ever acquiring a very deep religious experience. The religious instinct, or the instinct to worship some thing or some body, is found in all peoples, no matter how primitive they may be. In civilized human beings it seems not to become normally insistent much before the period mentioned.

Closely bound up in the instinct to worship, which makes its strongest appearance in adolescence, is the natural reverence for and interest in nature and the universe. To quote from Dr. Hall again:

... The rapidly increasing brain connections make possible many new associations with their effects upon imagination and reason, so that for the first time there is now a possibility of the youth seeing the universe as a universe, and feeling it as divine. In the later teens most youths and maidens love to think of infinity, both in space and time. They try to picture it, and become filled with the sense of their own littleness and the vastness of the universe. Most often these reflections attach themselves to the heavenly bodies and the sky, toward all of which the feelings are greatly deepened at adolescence. Now the sun moon and stars become *foci* for all sorts of symbolism and fancies, sometimes sentimental and sometimes mythological and religious. Clouds also become, in Ruskin's opinion, one of the greatest stimulants to imagination, as well as the most beautiful in their color and form and variations. The wind now echoes the restlessness of the youth, and the sea attracts him with its suggestions of eternity. If it really is true that nature appeals to the youth primarily in this poetical way, then it is little wonder that he has no love for high school and college science. To turn from the lover's moon to the burned-out, cold, dead moon of science; from Shelley's cloud to a mass of cold, aqueous vapor with a long Latin name; from a glowing opal symbolic of faith and hope to a dry record of geologic ages; from a heaven full of heroes, hunters, and maidens to estimates of the lengths of time necessary for a ray to reach us from one of them; all this must kill the spontaneous interest in nature and at the very best substitute for it utilitarian motives.

8. *An age of sexual interest.* Previous to about the age of fifteen years, children of opposite sexes manifest little

interest in each other. Often, indeed, boys are actually outspoken in their dislike for girls, whom they consider to be "silly," and perhaps physical "weaklings." Girls too not infrequently look upon boys as rough and barbarous, and rather to be shunned than cultivated. But from the middle teens this mutual dislike disappears, and the two sexes begin to feel a deep interest in each other. There is a pleasantness in the company of those of the other sex which previously did not exist in the minds of either in any particular degree. It is the age when good *camaraderie* exists between youths and maidens alike, a time when the foundations of firm and satisfying friendships between schoolmates are formed which endure throughout life.

The sex instinct is one of the two or three fundamental forms of behavior which shape all life and all ideals. Adolescence is the period when this instinct finds its expression in chivalrous attitudes toward woman, on the part of youths, and on the part of maidens respect and sympathy for men. Lives are easily shipwrecked in this trying period, and there is need for the greatest care and wisdom in directing the evolution of children through the most significant of all seasons, when the glamour of a dawning sex consciousness may easily throw the great and sacred things of life into false perspective and wrong relief.

9. *An age of great plasticity of nervous tissue.* Early adolescence is also characterized by the relative ease with which habits and attitudes are formulated. Previous to the dawn of the period certain fundamental habits of health and physical functioning have been formed, but it is in adolescence that the most significant life-habits and attitudes have their birth. Habits of industry or of shiftlessness and laziness; habits of thrift or of spendthriftness; habits of reverence or of irreverence; attitudes of chivalry or of contempt, of toleration or of bigotry; all these and a score more of the basic habits and attitudes of human life are acquired for the most part in adolescence. Human nature is represented at this age, within its hereditary limits, as a mass of plastic

clay, responsive in its moulding to the will of the artisan. Once the age is over, the habits and attitudes already formed will remain hard as adamant. Nature offers few second chances after adolescence. Generally speaking, what the youth is at twenty-five he will be when he is forty-five, so far as basic attitudes toward life and its problems and possibilities are concerned.

TOPICS FOR SPECIAL STUDY AND REPORT

1. Waddle makes the statement that "the typical delinquent is the boy . . . approximately fifteen years old." Can you account for this incidence of delinquency in the early years of the adolescent period?
2. From your knowledge of the nature of adolescence, try to make a list of some of the more dangerous stimuli which are likely to be encountered by boys or girls during their early teens.
3. Endeavor to illustrate the various points of the lesson by reporting to class all possible additional incidents of which you may know which would tend to show that adolescence is an age of dreams, of a heightened sense of self, of restlessness, of the social instincts, of moods, etc.

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LESSON 46

THE EVOLUTION OF THE SOCIAL ATTITUDE TOWARD CHILDREN

It will be interesting to note in this final chapter something of the slow evolution which society has undergone from primitive times down to our own day in its attitude toward its children. Somewhat recently Mr. George Henry Payne has published a significant volume entitled, *The Child in Human Progress*. This represents the patient research of years into this absorbing topic, and we shall be compelled to follow it largely here for the simple reason that it is the most comprehensive and sympathetic inquiry into the evolution of society toward its children that is available.

We are likely to assume in these days of philanthropy that children have always been, by all peoples, objects of solicitude and charity, and that the human race has since its appearance upon the earth guarded and conserved its children as its most precious and most indispensable asset. Such, however, is not the case, as it will be the aim of this final lesson to show. Indeed, the very fact that there exist in our own land to-day various societies for the prevention of cruelty to children, that there stand upon our state and national statute books laws regulating child labor, and that there are innumerable children's friends' societies and orphanages, etc., should naturally lead us to infer that in past ages, when man was still in a stage of evolution wherein none of the niceties and charities and philanthropies of to-day were existent, the place which children occupied was anything but enviable.

The Papuans. In the book above referred to, Mr. Payne describes at some length the condition and position of childhood among the uncivilized people of New Guinea.

Among these tribes the number of children allowed to survive is always very limited, the reason being, partly at least, that children are considered a hindrance in gaining a livelihood; and partly that they are continually in fear of famine, hence deem themselves compelled to keep down the birth-rate, or at least the *living-rate*. One particularly revolting custom of the Papuans is to bury children alive whenever the parents or some person of tribal importance dies, the excuse being that the parents will have need of the services of their children in the other world to which they are supposed to have gone. Cannibalism is still common among them, and usually it is the children who are massacred for the feasts.

Other primitive tribes. Among certain tribes of Central Australia twins are considered to be monstrosities, and are immediately put to death as something which is unnatural. Among the Kaffirs it was found that when twins are born, one is usually put to death, the sounder of the two being permitted to live. In some primitive regions the mother who bears twins is considered just as much a monstrosity as are the children themselves, and not infrequently both mother and infants are sacrificed. Among the Australian aborigines it is usual to destroy those children who are malformed or defective in physical features. In some parts of Africa a child born with teeth is put to death. In Kamchatka children born in stormy weather are likewise disposed of. One writer, quoted by Payne, states that the entire months of March and April, the last week in each month, and every Wednesday and Friday, are considered in Madagascar to be unlucky days, and any child born on any day included in this enumeration is put to death! Among certain Madagascar tribes a child who sneezes at or shortly after birth is exposed to the elements to die. Among the Basuto, when a child is born with its feet first, it is killed, whereas among the Bondei it is killed if it is born head first. The Bondei consider a child who cries at birth or immediately after unlucky, and forthwith strangle

it. Female babes are more often exposed or strangled than are males in most primitive tribes.

It is obvious that when we speak of tribes that are primitive at the present day, we are dealing with peoples who have failed to progress since most ancient times; hence we may regard the Papuans, the Madagascar peoples, and the savage Australian tribes as on a par with primitive people of thousands of years ago. We are therefore really studying the past in the present, and may assume that the treatment accorded children by such tribes at the present time is typical of the treatment which they endured at the hands of parents thousands of years ago when the earth was young, or at least when the human race was young upon it.

In general, the real reason lying back of the sacrifice of children was no doubt the perennial and endless fear of famine which hovered over savage races like an avenging fate. In many instances this fear was dissembled in superstitious rites and religious sacrifices, but it is extremely doubtful whether such motives really can account for the tremendous burden of infanticide and cannibalism and sacrifice which darken the records of antiquity. Often the primitive peoples urged in justification of their disposing of superfluous babies, the hindrance which children caused them in their nomadic life, but it is probable that this, too, was but a cloak to cover their supreme terror of lean years when the harvests should fail and the food supply run treacherously low.

The Greeks. Even among the Greeks, with all their finer qualities, the fate of the children seems to have been often cruel. Every father had the right to expose his child if he so chose, at least in the earlier periods of Grecian history. Exposure by him was very common, and the favorite figure in the comedy of the fourth century was the child who had been exposed by his parents, rescued, and afterwards found by them. "Nothing more foolish than to have children," says an old Greek proverb. And again, "There is nothing unfortunate in being a father, unless one

is the father of many children." Often the Athenian would consent to bring up his first child, but exposed those subsequently born. The female baby was deemed to be of little importance, but the son must invariably be brought up, it being little less than a religious duty to rear him. It should be said in justice to the Greeks, however, that whenever a child was exposed it was usually with the hope that it would be discovered before too late and rescued from its fate. To this end the early part of the day was ordinarily chosen for the gruesome task of exposing the infant, in order that there might be greater chance of its being discovered before nightfall. Babies were deposited "in the hippodromes, at the entrance to the temples, and the sacred grottoes, where they would be most in evidence. A watch was kept on the place, or it was revisited in order to be sure of the fate of the infant."

The Romans. You recall the story of the mythical founding of Rome by Romulus and Remus, and you recall also that Romulus and Remus were exposed, befriended, and nursed by a she-wolf, and finally grew to manhood under her nurture. From this incident we may presume that exposure among the early Romans was likewise common. And, indeed, we know it to have been. The *pater potestas* gave the father complete power of life or death over his children. He could let them live or expose them according to his desire. Hence he often did the latter, if it pleased him. When Rome degenerated in its later period so hopelessly, the Roman attitude toward children perhaps reached its worst manifestation, notwithstanding the humanitarian efforts of some of the emperors to improve the situation. Undesired children were commonly abandoned in the streets or thrown into the Tiber. Commonly the exposed children were rescued by fakirs, and mutilated in order to be for them a source of revenue in appealing to the sympathy and generosity of passers-by! Thus, Seneca says, referring to the mutilated children: "Look on the blind wandering about the streets leaning on their sticks,

and on those with crushed feet, and still again look on those with broken limbs. This one is without arms; that one has had his shoulders pulled down out of shape in order that his grotesqueries may excite laughter. . . ."

It should not be forgotten, however, that through all these times of degeneracy and profligacy on the part of the idle and wealthy upper classes of Rome there was growing up slowly a better ideal of family life and the institutions based upon communal living among the common people, and that among these classes, at least, the true importance of the child was being gradually comprehended. It was after all the profligate upper classes who were the chief offenders. With the coming of Christianity and the teachings of Jesus, a new impetus was given to safeguarding the lives of the children, inasmuch as it was one of His own teachings that "a little child shall lead them."

In the Middle Ages. But after all the teachings of Christianity did not result in universal nor immediate amelioration of the estate of the children. The practice of ridding one's self of undesirable children persisted to such an extent down through the Middle Ages that the Church, as representing the most enlightened agency, was compelled to become the avowed protector of parentless children. Mothers who felt that they were unable to rear their children were enabled thus to deposit them in the care of the church authorities who engaged to rear them. "By the door of the churches it became the custom to have a marble receptacle in which mothers placed the children that they were forced to abandon." Yet in spite of this provision, so hard were conditions of living in the early ages of the Christian era, that thousands of children were thrown upon the highways or left in the deserts to die. In France, Germany, Flanders, Italy, and England it was always possible for poor parents to take their children to market and sell them "like the veriest chattels." Under the inspiring need of the times foundling hospitals and orphanages sprang up all over Europe, where the children who were deserted or abandoned

were given homes and brought up in some measure at least of comfort. In Paris, during the sixteenth and especially the seventeenth centuries, poverty was the rule rather than the exception, with the result that babes were thrown into the sewers daily by mothers who were unable to rear them. And again, as in ancient Rome, children fell into the hands of magicians and mountebanks, who deformed and mutilated them in order to make them an assistance in winning a livelihood.

The factory system. With the coming of the factory system in England, particularly in the seventeenth century, the abuses to which children had previously been subjected took a new turn. Forthwith any child who was a public charge was placed in the factories and set to work, regardless of his age or condition of health. Says Payne:

A little creature of six years was thought fit for labor in the town of Norwich, the chief seat of the clothing trade. Writers at that time, and among them some who were considered as eminently benevolent, mentioned "with exultation, the fact that in that single city boys and girls of tender age created wealth exceeding what was necessary for their own subsistence by twelve thousand pounds a year."

The overseers of the poor became the agents of the mill-owners, and arranged for days when the pauper children could be inspected and selected for the factory work. When the selections had been made, the children were conveyed by canal boats and wagons to the destination, and then their slavery began. Sometimes men who made a business of trafficking in children would transfer them to a factory district where they were kept in a dark cellar until the mill-owner, in want of hands, came to look them over and pick out those that he thought would be useful. Nominally the children were apprentices, but actually they were slaves, and their treatment was most inhuman. The parish authorities, in order to get rid of the imbeciles, often bargained that the mill-owners take one idiot with every twenty children. What became of the idiots after they had passed into the hands of the capitalists is not known, but in most cases they did not last long and mysteriously disappeared. . . . The children who were apprenticed out to the mill-owners were fed on the coarsest kind of food and in

the most disgusting way. They slept by turns, in relays, in beds that were never aired, for one set of children were turned into the beds as soon as another set had been driven out to their long and filthy toil. Some tried to run away, and after that they were worked with chains around their ankles; many died, and the little graves were unmarked in a desolate spot lest the number of the dead attract too much attention.

The amazing thing about it all is that for generations almost nothing was done to ameliorate the conditions in which innocent childhood found itself. Beginning shortly after the year 1800, various reformers and philanthropists and writers turned all the power of their invectives against the universal exploitation of childhood in England, but with little substantial result for fifty years or more. Among others Charles Dickens took the side of the victims of the factory system and the avaricious owners, and succeeded, perhaps more than any other person, in interesting the public in their condition. M. T. Sadler in the House of Commons, and Lord Shaftesbury in the House of Lords, represented the champions of the children in officialdom, and it was due in considerable measure to their efforts that restraining legislation was finally written upon the statute books of England. This fixed the number of hours which children should be permitted to labor, and limited both the kind of work and the age of the worker.

The eighteenth and the first half of the nineteenth centuries found the children of America similarly victims of child labor. Indeed, when the first cotton factory in this country was started (in Beverly, Massachusetts) it was stated that it would afford "employment to a great number of women and children many of whom will be otherwise useless, if not burdensome, to society." In 1866 a special committee reporting to the State Legislature of Massachusetts made the following statement concerning the somewhat prevalent custom of factory-owners canvassing for small children to operate their spindles and run their machinery: "Small help is scarce; a great deal of machinery has been

stopped for want of small help, so that the overseers have been going around to draw the small children from schools into the mills; the same as a draft in the army."

After the Civil War, however, a humanitarian movement began to spread all over this country in the interests of child welfare and conservation. Following upon the establishing in New York, in 1866, of the first Society for the Prevention of Cruelty to Animals, there grew, in 1874, a movement to look after the rights of children, a Society for the Prevention of Cruelty to Children, and dating from the organization of this latter society are the first special laws known in the world to protect children and punish wrongs done to them.

But the end is not yet. There still exist within our land the evils of child labor, of child abuse, and of child exploitation. We can take courage, however, from the fact that a strong and intelligent public opinion is being fostered throughout the length and breadth of these United States which condemns, in no uncertain terms, any and all agencies which "give offense unto one of these little ones."

TOPICS FOR SPECIAL STUDY AND REPORT

1. Secure the latest report of the National Child Labor Committee, and study the problem of child labor as it exists in our own country at the present time.
2. The ancient Spartans exposed puny or sickly children to die upon the mountain-top; they wanted none save vigorous children who would make vigorous and valorous soldiers. Contrast with this our own attitude toward weak or sickly infants. What conclusion do you draw as to the evolution of the social attitude?
3. Gather all the information possible concerning your own State or local branch of the Society for the Prevention of Cruelty to Children. Do you know of any cases where this society has intervened as between parents and child?
4. Familiarize yourself with the principal child labor laws of your own country or State.

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